



Winnipeg International Airport



Economic Impact Study

August 31, 1989



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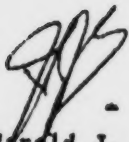
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The Economic Impact of
the Winnipeg International Airport

by

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EXECUTIVE SUMMARY

This study has achieved its overall objectives of describing and estimating the economic impact of the Winnipeg International Airport. The response rate for the survey of "primary" and "secondary" linkages, the primary basis for the analysis, was 68.8 per cent. The economic activity of all those organizations deemed most critical to the study was obtained through this survey. A second survey that involved "airport-dependent" hotels and motels achieved a response rate of 51.7 per cent. Again, the respondents accounted for most of the economic activity of those included in the survey. As such, the following are the principal findings of the study:

- (i) The revenue/sales associated with Winnipeg Airport business, government services and airport operations exceed the sales of the seventeenth ranked firm in Manitoba. From a national perspective, these revenues/sales would place the Winnipeg International Airport 224th in the Financial Post 500 largest industrial firms.
- (ii) The total employment impact of the Winnipeg Airport is 9,238 person-years. Included in this total impact are 5,543 jobs that are directly airport-related and 286 associated with new airport construction. The rest of the jobs are caused by the economic multiplier effect.

- (iii) Earnings made by airport-related employees represent approximately 1.6 per cent of Manitoba's total labour income; however, total direct airport employment represents only 1.1 per cent of the total employed labour force. This disproportionately greater share of labour income is equivalent to \$608.67/week, higher than for every industrial sector in Manitoba, except Mining.

Not only are airport related earnings relatively high, but the earnings made in activities sustained by airport-related economic activity are also well above the provincial average.

- (iv) The Winnipeg International Airport contributes \$430.4 million to the provincial GDP in terms of direct, indirect and induced economic activity. Consequently, \$2.12 of every \$100 of provincial GDP originates from the Winnipeg Airport.

- (v) The Winnipeg Airport also has a significant impact on Winnipeg's convention industry. Expenditures by delegates arriving by air has been estimated at \$25.5 million. As well, recent renovations and the new Winnipeg-Denver route should enhance the Winnipeg convention industry's position in what is a very competitive market.

- (vi) Of the total number of domestic travellers visiting Winnipeg and arriving by air, 55 per cent stay in a hotel or motel. The airport has a substantial impact on a well defined segment of the hotel and motel industry. "Airport-dependent" hotels and motels derive approximately \$23.1 million of accommodation revenues from air travellers. The corresponding employment related to these revenues is 935 person-years. Based on these accommodation revenues, \$2.8 million in taxes is contributed annually by air travellers to the Province of Manitoba through the 12 per cent provincial room tax.
- (vii) The Winnipeg Airport causes social costs as a result of its location within a metropolitan centre, but nothing from the study indicates that these costs are any greater than other similar airports.
- (viii) The surveyed organizations reported paying provincial taxes of \$19 million and municipal taxes of \$5.5 million. Included in this impact are aviation fuel taxes of \$8.8 million, payroll taxes of \$4.0 million, and property taxes of \$5.4 million.
- (ix) Because Winnipeg is located relatively far from other major centres, its airport is essential for business travel. For most overnight domestic trips, Canadian

business travellers fly only 27 per cent of the time. For distances exceeding 800 kms., however, the number of business travellers who fly is almost three times greater than the number who drive. The importance of the Winnipeg Airport to business travellers is, therefore, apparent. Highway distances between Winnipeg and other major centres either approach or exceed the distance for which business travellers have a much greater propensity to fly.

- (x) Based upon Transport Canada forecasts, direct airport-related employment has been forecast to increase from 5,543 to 7,856 by the year 2000. As well, the revenue/sales output is expected to increase from \$406.9 million to \$622.1 million.
- (xi) Since 1982, public investment at the Winnipeg International Airport has totalled \$54 million. Further, public investment of \$24 million is planned for the period 1989-91. When completed, the Winnipeg Airport will be capable of handling all projected passenger growth to the year 2000. Estimates of private investment at the airport are not available, with the exception of a new general aviation facility. The initial investment of \$2 million will be augmented by a new hangar to be constructed in 1991.

1.0 Introduction

Winnipeg, capital of Manitoba, is the seventh largest city in Canada, with a total population of 628,000.¹ The rest of Manitoba's population is dispersed in Brandon, Thompson, Portage la Prairie and smaller urban centres and rural communities throughout the province. Therefore, the Winnipeg International Airport serves the air transport needs of not only Winnipeg, but the entire province.

The Winnipeg International Airport, currently owned and operated by Transport Canada, is the oldest international airport in Canada. Since 1928, the Winnipeg Airport has provided Manitoba residents with access to both a national and an international air transportation network. As well as serving the transport needs of Manitobans, the airport is the principal gateway for visitors arriving in Manitoba by air.

During 1988, 2.5 million passengers enplaned and deplaned at the Winnipeg Airport (the sixth busiest in Canada) and over 30,000 tonnes of cargo were handled at the airport site.² In addition to its commercial traffic, the airport handles a significant amount of military activity. The joint military/civilian operations at

¹ as of June 1, 1988.

² The cargo statistic has been supplied by the Winnipeg Business Development Corporation. The official Transport Canada statistics for cargo are understated because they include the activities of only "Mainline Unit Toll" carriers and charters; however, cargo operations also are carried on by "regional carriers." Therefore, the Development Corporation's statistic is probably more reliable.

the Winnipeg Airport are a distinctive feature of the airport that have existed since the 1920s.

The airport site covers a total area of 1740 hectares (4300 acres) and is located within Winnipeg's urban limits, in the community of St. James-Assiniboia. This location is approximately seven kilometres northwest of the central downtown business district.

1.1 Rationale for the Study

In 1987, the federal government introduced a new policy, outlined in A Future Framework for the Management of Airports in Canada, to govern the operation and ownership of airports.³ For airports being maintained by Transport Canada, these guidelines have encouraged "commercial orientation, potential contribution to economic development, and responsiveness to local interests and concerns." To achieve its specified objectives, the publication recommends that airport management "foster a community appreciation of the economic impact of the airport."

Whereas the economic relevance of private enterprise can be measured by commercial profit, the economic contribution of an airport to its local economy is not so apparent. Airport activities include not only the operation and management of the terminal facility, but also the business of airport tenants and airport-dependent organizations located off-site. Unless this

³ A Future Framework for the Management of Airports in Canada. Transport Canada, TP8353.

airport-related activity is viewed as a whole, however, the real economic significance of an airport may be obscured.

Airport-related organizations create "direct economic impacts" by producing consumer goods and services, employing local residents, and providing local suppliers with orders. As well, "indirect" and "induced" impacts occur during subsequent rounds of economic activity. By quantifying these impacts, the economic orientation of an airport can be better appreciated by interested parties.

1.2 Study Objectives

The overall objective of this study is to describe and estimate the economic impact of the Winnipeg International Airport.

Related and subordinate objectives are to:

- (i) quantify the "primary" and "secondary" economic activities related to the airport. These measures form the basis for the direct impact measure;
- (ii) calculate the "multiplier effects" which result from the initial direct economic impact;
- (iii) compare the airport's economic impacts with economic measures of the local and provincial economy;
- (iv) identify and describe the external costs and benefits of the airport; and,
- (v) discuss future trends and issues that may affect the airport's role in the economy.

1.3 Organization of the Study

Following this introductory section, Section Two develops the method of analysis and conceptual framework for the study. To this end, key economic concepts are defined and explained, the target population is established, and the units of measurement are specified. In addition, Section Two outlines the survey technique and strategy.

Section Three describes the survey data and interprets the results. To provide a frame of reference for the study, the results are compared, where appropriate, with regional and provincial economic statistics.

Although some impacts are significant, either their inclusion is not consistent with the generally accepted methods of analysis or the impact has already been captured. Still, some of these linkages are noteworthy, and, therefore, a subsection of Section Three is included to illustrate two such cases.

The purpose of Section Four is to describe and identify the social impacts of the Winnipeg Airport. This discussion is intended to complement the analysis of economic impacts.

Section Five reviews the official Transport Canada forecasts of passenger traffic at the Winnipeg Airport. Emerging trends and the future role of the Winnipeg Airport are also discussed in this section. Finally, based on the survey response, a forecast of economic activity is projected to the year 2000.

Section Six, the final section, summarizes the findings, makes final observations, and offers concluding remarks.

2.0 Method of Analysis and Definitions

2.1 Economic Impact Studies

Although "impact studies" and "feasibility studies" are conceptually similar, their objectives are quite distinct. Nevertheless, impact studies have been frequently misinterpreted because of this similarity.⁴ To appreciate the approach, objectives, and results of the present study, a brief overview and comparison of these two types of studies is pertinent.

Impact studies use a "descriptive research approach" to examine particular economic, social, or environmental phenomena or institutions. As such, this type of study identifies and describes, but does not evaluate or explain, its prescribed research subject. "Economic impact studies," for example, are frequently used to describe the economic activities of proposed projects or existing infrastructures, or the economic consequences of policy initiatives or plant closures or expansions.

The primary objective of the impact study is to measure the impact effect of the research subject. This is done by implicitly assuming a "with-without" scenario of the research subject and then measuring the associated impact. By definition, economic impacts are viewed and measured in "the shortest of all runs."⁵

⁴ W.G. Waters II, "Impact Studies and the Evaluation of Public Projects," Annals of Regional Science, 1975.

⁵ Graham Bannock, R.E. Baxter, and Ray Rees The Penguin Dictionary of Economics (Penguin Books Ltd., Harmondworth, Middlesex, England), p.206.

While economic impact studies are appropriate for depicting the economic linkages of an airport, or any other such research subject, they are not designed to evaluate net effects. Therefore, an airport may have a significant economic impact, but not necessarily a net benefit.

The net economic benefit of an airport depends on the opportunities foregone by workers and other resources employed in airport-related activities. If an airport were to disappear, its resources would probably be employed elsewhere. However, the short time frame assumed by the impact effect does not account for such opportunity costs.

The infrastructure required to service an airport may impose a significant cost on the surrounding community. Costs, such as those associated with access roads, public transit, sewage and water supplies determine, in part, the net economic contribution of an airport. Like opportunity costs, however, these costs are not included in the impact effect.

Economic impact studies are designed to evaluate "internal" costs and benefits, rather than "external" ones. Whereas internal costs are limited to explicit measures of production and consumption activities, external costs, such as those caused by airport noise, are borne by third parties. While some impact studies do describe, and may attempt to quantify some externalities, they do not measure net losses or gains in economic welfare.

In comparison, net benefit studies, such as benefit-cost analyses, are primarily used to appraise the economic worth of projects. Benefit-cost analysis is a systematic method of evaluating the relative merits of alternative investment projects.⁶ This technique is a means of identifying, portraying, and comparing the relevant factors for allocating resources.

Because impact studies are less systematic than feasibility studies, they may appear to be arbitrary: the inclusion or exclusion of some impacts depend mainly on the analyst's discretion, and not on specified guidelines or principles. However, the quality of the study depends on the integrity of the analyst, and credible results are attainable from objective and responsible research.

2.2 Economic Activity

Economic activity employs "factors of production," such as labour and capital inputs, to produce goods or provide services. Impact studies measure the value of output and the costs of selected factors of production. These measures describe the economic activity that is related to the research subject.

To produce their outputs, airport-related businesses hire employees from the surrounding community, and procure locally produced supplies and services. In addition, to conduct their

⁶ Benefit-Cost Analysis Guide, Supply and Services Canada 1982.

business in the local economy, firms are generally obliged to pay provincial and municipal taxes and levies.

These economic activities and tax contributions further the well-being of the local economy in several ways: employees receive labour income; consumers are beneficiaries of the final outputs; suppliers receive orders; and, governments derive tax revenues.

Any organization generating economic activity has not only a "direct" impact, but also secondary impacts. In this study, the direct impacts are caused by those businesses and organizations that are "airport-related." On the other hand, the secondary impacts, or "indirect" and "induced" multiplier effects, are the summation of that economic activity occurring as a result of spending by airport-related firms and their employees.

2.2.1 Direct Economic Impacts

This study defines an airport's direct economic impact as the sum of its on-site economic activity plus that portion of off-site activity that is airport-related. Some off-site organizations, such as hotels, derive only part of their business from the airport; consequently, only a portion of their economic activity is included in the direct impact measure.

While the off-site revenue impacts are obtained directly from survey questionnaires, the corresponding off-site employment, as

well as other impacts, is more difficult to determine.⁷ Given the implicit "with-without" assumption made by impact studies, airport-related employment depends upon its relationship with airport-related revenues.

Microeconomic theory postulates that a profit-maximizing firm would continue to employ workers, or any other factor of production, to the extent that each additional unit adds more to revenue than to total costs. At the point where "marginal revenue product" is equal to "marginal cost of labour," the firm would be in equilibrium.⁸ Given an incremental change in airport-related revenues, firms would theoretically adjust employment until it is once again in equilibrium.

Without knowledge of the firms' production functions, the present study adopts a pragmatic approach for determining economic activity that is off-site but still a direct impact.⁹ Rather than employ marginal analysis, the off-site employment, and other impacts, are calculated by assuming a direct and proportional relationship with airport-related revenues.

⁷ The survey is discussed in Section 2.4.1. Also, see the sample copy of the questionnaire of primary and secondary organizations in Appendix II. Off-site airport-related revenues are obtained from "Section E" of the questionnaire.

⁸ "Marginal Revenue Product" is the extra revenue gained when output is increased by one unit; "Marginal Cost of Labour" is the change in cost from a small increase in labour input.

⁹ A production function is a mathematical relationship between the quantity of output and quantities of inputs.

In determining which organizations are "airport-related," and therefore the direct impact, studies of different airports have employed various definitions. This inconsistency has resulted in questionable off-site economic activity being included in the direct impact, therefore, precluding a meaningful comparison between the findings of this study and those of any other such study. However, the present study has adopted the same framework used in other recent studies of Canadian airports; by doing so, if a standard were to be established, future comparisons may then be realized.¹⁰

Such studies have specified which organizations qualify as being airport-related and have subdivided them into two basic categories: "primary" and "secondary" linkages. This classification is incidental to the calculation of the direct or total impacts; rather, it is a convention developed in these earlier studies.

The Department of National Defence (DND) does not strictly adhere to this prescribed framework; yet, like other airport-related businesses and organizations, it has a significant presence

¹⁰ see: Stanley Associates Engineering Ltd. Vancouver International Airport Economic Impact Study, Final Report. Vancouver, 1986;

Thorsten Duebel A Study on the Economic Impact of the Edmonton International Airport On The Local And Provincial Economy. May, 1988; and/or,

T.M. Mazarolle and B.G. Bisson "A Methodology for Airport Economic Impact Studies," Canadian Transportation Research Forum, 24th Annual Meeting, 462-474.

in the local economy. In considering the special status of the DND, this study will present this economic activity as a separate item apart from the "primary" and "secondary" linkages, but included in the direct impacts.

2.2.1.1 "Primary" Linkages

Primary linkages are defined as aviation-related and are located either on-site or in the immediate vicinity of the airport. These organizations are classified as follows:

- (i) air carriers: all companies offering scheduled service within Manitoba, to other points in Canada, or to destinations outside of Canada.
- (ii) general aviation:
 - (a) charter air operators (rotary and fixed wing);
 - (b) corporate aviation operations; and,
 - (c) government aviation.
- (iii) air support services: includes a variety of companies that are primarily or wholly aviation related. These businesses provide direct support or supplies to air passenger and cargo carriers.

The following types of businesses are included in this category:

- (a) customs brokers;
 - (b) air freight forwarding companies;
 - (c) air couriers;
 - (d) local aircraft maintenance and service organizations;
 - (e) aircraft parts;
 - (f) airplane engine repairs;
 - (g) aircraft fuelling operators;
 - (h) flight catering services;
 - (i) sales, rentals or aircraft leasing businesses; and,
 - (j) general air support services.
- (iv) airport operations and administration: include government operations, overall administration, and support services, including any contract services.

Organizations in this category are involved in the daily operations of the airport facility. These operations are the responsibility of government departments that perform, or contract with private firms to provide these services. Transport Canada is the major department involved in these activities.

The following types of organizations are included in this category:

- (a) airport authority group;
- (b) security services;
- (c) janitorial services;
- (c) customs and immigration;
- (d) RCMP; and,
- (e) agricultural plant and animal quarantine.

2.2.1.2 "Secondary" Linkages

Secondary linkage organizations are airport-related, but not aviation-related. Their business is derived primarily from air passengers, both off and on the airport site. Secondary linkages include the following types of businesses:

- (i) on-site retail establishments: includes all retail and personal services businesses operating on the airport site (airport duty free shops, newsstands, gift stores, coffee shops, and other concessions).
- (ii) ground transport companies: include all firms that service the airport.
 - (a) car rentals: each firm operates under a five-year lease from Transport Canada. Leases are awarded on the basis of the highest bid from competing firms.¹¹
 - (b) taxi and limousine service.
- (iii) travel industry: this category of secondary linkage businesses includes travel agencies and hotels or other food and beverage operators who provide service to

¹¹ These bids provide a guaranteed return to Transport Canada, based upon a percentage of gross sales (currently about 10.5 per cent at the larger airports) or a flat fee plus additional payments for counter and office space, and parking spaces for the rental fleet.

passengers travelling by air for business or for pleasure.

- (a) travel agencies: are corporations or persons who sell air transportation, and related services, to the public on behalf of and in return for a commission, usually from a charter or scheduled air carrier. The commission is based on a percentage of the retail price paid for an airline seat.

Agents also act on behalf of and receive commissions from such industry principals as tour operators, hotels, cruise lines, and the rail roads. Airline commissions account for the majority of agent's revenues: up to 75 per cent of an agency's total sales.

- (b) hotel and motel industry: these businesses derive revenues from air travellers' expenditures on accommodations, food and beverages, and entertainment. However, it is difficult to relate non-accommodation revenues to air travellers. Hotels derive revenues from patrons who are not necessarily guests. For the purposes of this study, the impact will be limited to accommodation revenues only.

Although an airline may depend solely on the airport, the airport hotel may not, because it also receives patrons who arrive by other means of transportation. Therefore, the impact is limited to that portion of their business that is air traveller dependent.

2.2.1.3 The Department of National Defense

Winnipeg is the Canadian centre for Air Command, and the Winnipeg base is the Department of National Defence (DND) centre for navigational training. Air Force units have been stationed in and around Winnipeg since 1922. During the Second World War, because of the British Commonwealth Air Training Plan, Winnipeg became a major centre for supply, repair, and inspection. The

military base has remained since the war, and now supports one of the largest centres of air force activity in Canada.

The operations of the Department of National Defence are an integral part of the activities at the Winnipeg Airport. Military operations are concentrated in the southwest corner of the airport and occupy approximately 210 ha., or 12 per cent, of the total airport land. In addition, approximately 20 per cent of the total movements at the airport involve military aircraft.

2.2.2 "Indirect" and "Induced" Economic Impacts

The economic activity related to a particular phenomenon or institution has an effect that is greater than its initial impact. In addition to the previously discussed "direct impacts," firms also initiate a second round of economic activity when procuring inputs from their suppliers. To satisfy the original demand caused by the economic activity of airport-related organizations, suppliers must also procure inputs from the local economy. This interaction between manufacturers and suppliers is again repeated through successive rounds of economic activity.

Because the provincial economy is not closed, part of the economic activity "leaks" out during each round, and the effect originating from the direct impact becomes progressively smaller until it is negligible. The summation of effects beyond the initial impact is known as the "indirect effect" and is expressed in a single number.

A second multiplier effect is initiated when firms involved in airport activities hire residents from the surrounding community. A portion of the labour income received by these employees is, in turn, spent on household goods and services. This re-spending also causes successive rounds of economic activity, which, in total, is known as the "induced effect."

The sum of the direct impact, and indirect and induced effects equals the total economic impact. This total effect can be calculated by applying the appropriate multiplier to the direct impact.¹² In doing so, three separate measures of the multiplier effect are made: that of labour income, gross domestic product, and employment.

A caveat must be added before the economic multipliers are applied to the direct impacts. If full employment were to exist in an economy, the simple multiplier would unlikely provide an adequate explanation of the permanent effect of the "with-without" scenario. The multiplier effect would result in a positive net benefit only if there were unemployed resources and excess capacity in the economy; otherwise, resources are simply being diverted from alternative uses.

Economic multipliers are commonly used to establish the economic consequence of establishing a new firm, or the expansion,

¹² In the case of this particular study, "absolute" economic multipliers that are calculated by the Manitoba Bureau of Statistics are used to determine the total labour income and employment impacts. The total contribution to the GDP is derived using "intensity ratio" economic multipliers, which are also provided by the Manitoba Bureau of Statistics.

contraction, or closure of an existing firm. The "with-without" scenario implies such a change, but, because opportunity costs are not accounted for, its effect can only be viewed in the short-run.

2.3 Measures of the Economic Impact

The primary objective of this study is to measure the economic activities related to the Winnipeg Airport. Therefore, the economic impact will be described by the following measures: value of output or net revenues, employment numbers, labour income, expenditures on goods and services, and contributions to the local tax base. Each measure provides a separate description of the Winnipeg Airport's economic activity.

To this end, the survey will measure the following:

- (i) economic output or net revenues: are determined by the total gross revenue from all airport related activity less any intermediate products. Intermediate products are goods that are used in the production of other goods, rather than for final consumption. The values of the intermediate goods are already implicitly included in the prices of the final goods. For example, the revenues from the flight kitchen or aircraft fuel companies are an expense of the airlines. To count both would result in double counting; therefore, any transfers of business done between companies in the target population are eliminated.

Because most government organizations do not sell a product, the value of their outputs cannot be determined in the same way as it can for commercial organizations. The value of output of public organizations, the most notable being the Department of National Defence, is instead determined by their operating budgets. These amounts indicate, at market prices, the value of the goods and services that they offer.

- (ii) employment numbers: are defined in total person-years of employment. A person-year of employment equals the amount of labour a person would work if fully employed for a year. For example, two part-time employees who

work twenty hours per week are equivalent to one full-time employee who works forty hours per week.

- (iii) labour income: measured in terms of annual wages and salaries, including overtime, paid to local employees.
- (iv) contribution to the local tax base: this measure assesses the total provincial and municipal taxes and levies paid by airport-related organizations.
- (v) expenditures in the local economy: pertain only to expenditures on goods and services that are procured within the province.

Some studies have also included a measure of capital investment as part of their impact.¹³ This measure is contentious because capital expenditures are regarded as being committed, or "sunk," and, by themselves, do not reflect economic activity. The relevant opportunity cost of such assets is not the amount spent on them, but rather their highest value in an alternative use. Consequently, this study has elected not to use capital replacement costs as an economic impact measure.

Capital investments and expenditures on capital goods may raise problems for economic impact studies because of their "lumpiness". If a study happens to choose a year with a great deal of capital expenditure, it could over-estimate the "average" economic impact. Similarly, choosing a year that was characterized by little capital investment could under-estimate the economic impact.

¹³ Capital costs are included in the Vancouver Airport Study (Stanley Associates Engineering Ltd., 1986), but not in the more recent studies of the Edmonton Airport (Duebel, 1988) or the Thunder Bay Airport (Jankowski, 1989).

The largest capital investments at the airport are likely to result from public expenditures for additions or restorations of terminal buildings and runways. In this study, the public investment in airport facilities in the base year are reported as an identifiable economic impact. In addition, a profile of past and projected capital expenditures is provided as a context for interpreting the economic impact of investments in airport facilities. Capital investments by private firms are combined with their operating expenditures to determine the total economic activity at the airport.

2.4 Sources of Data

2.4.1 Economic Impact Survey

Since the "target population" of primary linkage organizations is relatively small, stable, and geographically concentrated, this study endeavours to measure the economic impact by a complete enumeration, rather than inferring it from a sample. To conduct a census-type study, however, it is essential that the target population be well-defined and that their cooperation be secured. A list of the surveyed primary and secondary organizations and a sample copy of the questionnaire are included in Appendices I and II, respectively.

2.4.2 Survey of "Airport-Dependent" Hotels and Motels

The objective of this second survey is to quantify the economic impact of hotels and motels that depend upon the airport.

This survey is similar to the preceding, except the questionnaire is simplified and designed for the hotel-manager respondent. A sample copy of the questionnaire is included in Appendix III.

The study considers only hotels and motels that depend on the airport for a significant portion of their patrons and no attempt is made to infer the impact on the entire hotel and motel industry in Manitoba. However, this measure is expected to capture the greatest portion of the impact effect. This approach also illustrates that, rather than having a marginal effect over many businesses, airport activities have a substantial effect over a particular segment of the hotel and motel industry.

In Appendix IV, the survey population is listed and the qualifying criteria are outlined.

2.4.3 The Department of National Defence

The economic statistics for the military operations have been supplied by the Canadian Forces Base (CFB) Winnipeg and are for the Winnipeg Base only. Air Command Headquarters is also located on-site, but has not been included in the impact. This dichotomy is based upon the view that the decision to locate Air Command in Winnipeg depends not so much on the Winnipeg Airport as on the political process.

Some of the military operations at the airport, though taking place on-site, do not necessarily have to be done at the Winnipeg Airport. To elicit the germane information, Base Winnipeg was presented with a situation in which the airfield was assumed to

desist. Given this scenario, the economic impact related to the airport would then be those aircraft operations, such as maintenance and aviation training, directly affected by such an occurrence. This situation is strictly hypothetical and Base Winnipeg's response to it in no way reflects the political process or any other decision-making mechanism that may actually take place under real circumstances.

2.4.4 Secondary Statistics

Some of the secondary linkage organizations, such as travel agents, are more dispersed and constitute a larger population than the primary linkages, and are removed from the airport site. The farther economic activity is from the airport site, the less probability of attaining a satisfactory response. Consequently, rather than developing primary data on the economic impacts of these sectors, secondary aggregate data are employed.

In order to complete the analysis, secondary statistics are also used to estimate some accommodation revenues for non-responding hotels and motels. These statistics, and the assumptions regarding their use, are explained in Appendix V.

2.4.5 Economic Multipliers

There are several different ways of calculating economic multipliers. The economic multipliers used in this study have been

obtained from the Manitoba Bureau of Statistics (MBS).¹⁴ These figures were derived by the MBS from the Statistics Canada 1979 inter-provincial input-output model.

2.5 Social Impacts

In addition to its economic impact, airports operations are associated with a number of "external" costs and benefits. Externalities arise when social costs and benefits exceed the "internal costs" measured by the economic impact. Monetary measurements of these externalities are often difficult and lie outside the scope of this study. Nevertheless, these impacts are described and identified with secondary statistics and prior research.

To this end, the following externalities are considered:

- (i) aircraft noise;
- (ii) air pollution;
- (iii) air safety;
- (iv) ground traffic congestion; and,
- (v) aviation user benefits.

Certain "public goods," that are associated with the Winnipeg Airport, such as national defence, are also described.

¹⁴ Manitoba Economic Multipliers, Manitoba Bureau of Statistics, 1986.

2.6 Future Trends

Airport traffic is dependent upon a number of variables, including economic and population growth. These variables are essential for air traffic forecasts. Therefore, to discuss the future role of the Winnipeg Airport, the Official Transport Canada forecasts are reviewed with reference to secondary data.

In addition, a forecast of economic activity, measured by employment, and revenues, is made based upon the survey responses.¹⁵

¹⁵ See: Appendix II, "Section E" in the questionnaire of primary and secondary organizations.

3.0 The Economic Impact of the Winnipeg International Airport

Section Three, which contains the principal findings of this study, is divided into three major subsections. First, and most important, is the subsection that examines and discusses the "direct economic impacts" of the Winnipeg Airport. In the second major subsection, the "total economic impacts" are calculated. Finally, in the third subsection, selected linkages deemed to be "noteworthy" are identified and described.

In Section 3.1, the sources and limitations of the data are first addressed before presenting the direct impacts. Following this discussion, each impact--output, employment, employment income, taxes, and expenditures--is discussed in turn. Within the text of the first three of these impacts, each major linkage--the surveyed organizations, "airport-dependent" hotels, travel agents, and Canadian Forces Base Winnipeg--is examined separately and then in total. The latter two impacts are discussed in total only.

In Section 3.2, the total impacts are derived by applying economic multipliers to the direct impacts obtained from the preceding subsection. These total impacts are calculated in terms of employment, labour income, and contribution to GDP.

Finally, Section 3.3 describes two noteworthy linkages. This section has been included to illustrate and highlight the relationship between airport operations and linkages such as these. If not for this subsection, the relationship between the airport and these linkages would likely have been obscured within the detail of the previous subsections or left undiscussed.

3.1 Direct Impacts

3.1.1 Survey Response and Other Data Sources

As a prelude to the principal findings of this study, this subsection reviews the survey response and discusses, for each major linkage, possible limitations of the collected data.

3.1.1.1 Surveyed Primary and Secondary Organizations

Of the 80 organizations that were sent questionnaires, 45 replied by mail and another ten were interviewed, equalling an overall response rate of 68.8 per cent. While a complete enumeration was not achieved, this response rate is high compared to that attained by most other similar studies. The response rate alone, however, cannot be used to assess the success of such a survey; more significant is the relative impacts of those that responded and those that did not.

Table 3.1 categorizes the response rate by organizational type. Although most organizations were cooperative and did respond to the survey, those classified as "air support services" provided a relatively weak response. However, because organizations in this category have relatively small operations compared to those in the other categories, this undisclosed information should not affect the reliability of the overall findings. For example, freight forwarders and custom brokers, which typically have small operations, account for 52 per cent of the non-respondents. Because a high response rate was received by those organizations

having the greatest impacts, the difference between the findings in this study and the "true" impact is probably insignificant.

Table 3.1 Survey Response Rate

Organization type	Total number in target population	Response rate (%)
Carriers	10	80
General aviation	5	80
Air support services	43	56
Airport operations and administration	9	77
On-site retail establishments	7	100
Ground transportation	6	83
Total	80	

Where it was reasonable to do so, the economic activity of non-respondents has been estimated either by substituting the data of a comparable respondent or, if more than one such response was received, by using an average. In cases of non-respondents whose economic activity could not be determined with some confidence, rather than risk overstating the impact, no estimates were made. In any event, the data estimates are relatively minor and are only intended to "round out" the analysis. The impacts are presented such that the difference between the reported and estimated impacts are evident.

As well as having a high response rate, the survey also received answers that were quite complete. Where only partial

answers were provided, estimates were made by using the operating ratios from either other comparable firms or published sources.

The only part of the questionnaire that was generally answered such that a complete impact could not be determined was the section requesting tax data. Because another study using the same questionnaire design had also received incomplete tax data, this portion of the questionnaire appears as though it may have been unduly complex.¹⁶ Nonetheless, although a complete tax impact was indeterminable, questions pertaining to certain tax components, such as the aviation fuel tax, were answered well. Much of this information is usable and still other components were either calculated or obtained from sources other than the survey.

The only other withheld information of any significance was the revenue figures for the major airlines. For reasons of confidentiality, the major airlines declined to reveal their revenues for the Manitoba market. To account for this impact, the total airline ticket sales were obtained from Bank Settlement Plan (BSP) Canada. BSP, a ticket clearinghouse for air passenger ticket sales, distributes ticket agents' commissions and airline receipts. To account for ticket sales made directly through the air carriers,

¹⁶ Witold B. Jankowski Thunder Bay Airport Impact Study, Transport Canada, May 1989.

the BSP figure was increased by a third based upon an informal survey of airline representatives.¹⁷

Finally, an attempt was made to eliminate double counting of interrelated revenues. With eighty organizations involved, however, this was a difficult exercise that probably did not account for all such transactions. Obvious cases of double counting were avoided, such as travel agent commissions, and \$46 million of interrelated transactions, or 16 per cent of gross revenues, were reported by survey respondents. Although it is impossible to ascertain the degree of double counting that remains, most major linkages were identified and the effects of those that do remain should not significantly overstate the economic impact.

3.1.1.2 Travel Agencies

Approximately 175 travel agencies operate in Manitoba.¹⁸ Because these agencies are dispersed throughout the province, they identify less with the airport than the organizations included in the survey. Therefore, given the proprietary nature of the information being requested, it was expected that a satisfactory sample would have been difficult to obtain.

¹⁷ Industry representatives estimated that ticket sales to travel agents accounted for the following percentages of their total sales:

Air Canada	73 %
Canadian Airlines	75 %
NorthWest Airlines	80 %

¹⁸ Alliance of Canadian Travel Associations (ACTA) Manitoba.

Travel agency revenues were instead obtained from BSP Canada. The other impacts, such as employment, were then calculated by applying the industry's published operating ratios to the BSP figures. The BSP figures are the most reliable revenue figures available, and, therefore, calculations based on these should produce satisfactory estimates.

3.1.1.3 "Airport-Dependent" Hotels and Motels

Air travellers have a substantial impact on Manitoba's accommodation industry: of the total number of domestic travellers visiting Winnipeg and arriving by air, 55 per cent stay in a hotel or motel.¹⁹ However, non-accommodation revenues related to air travellers, or any other guests, are difficult to determine. Revenues from meals, beverages, entertainment, souvenirs, and other goods and services are derived from non-guests as well as guests. Therefore, as stated in Section Two, the revenue figures reported in the direct impact are for "accommodation" revenues only, necessarily underestimating the total impact of air travellers. Other similar studies have also limited this impact to only accommodation revenues.²⁰

The economic impact on "airport-dependent" hotels has been determined primarily from the returned surveys. Of 29 surveyed businesses, fifteen, or 51.7 per cent, responded; however, in terms

¹⁹ Canadian Travel Survey (1986), special tabulation.

²⁰ Duebel Economic Impact of the Edmonton International Airport.

of room numbers, respondents accounted for 64.4 per cent of the total, representing most of the economic activity of target population. To estimate the non-respondents economic activity, the survey data have been combined with other secondary statistics.

The number of hotels and motels that are "airport-dependent" represent a relatively small portion of the provincial total, but account for a major share of the accommodation business. In 1988, there were 89 hotels and 16 motels operating in Winnipeg.²¹ While airport-dependent hotels and motels comprise only 27.6 per cent of this total, they account for approximately 68 per cent of the total available rooms.²²

3.1.1.4 The Department of National Defence

As outlined in Section Two, the economic activity of the Department of National Defence is limited to flying units, schools

²¹ Manitoba Bureau of Statistics, Accommodation Occupancy Survey. 1988 (4th Quarter). In all of Manitoba, 315 hotels and 117 motels were in operation during 1988.

²² In 1988, there were 5,745 hotel and 558 motel guest rooms in Winnipeg. Hotels and motels that are defined as "airport-dependent" account for 4,275 of these rooms. During the last quarter of 1988, the largest facilities (hotels and motels with more than 75 rooms) operated an average 66.4 percent occupancy rate. Non-residents of Manitoba purchased 60.7 percent of all rooms sold in Winnipeg during this period (Manitoba Bureau of Statistics, Accommodation Occupancy Survey.) By comparison, non-residents accounted for only 21.4 percent of the rooms sold in the remainder of Manitoba.

dependent on operations, air maintenance, and various support functions.²³

The economic impact of the military differs from that of other related organizations in one notable respect: except for some managerial positions, non-military organizations hire primarily from a pool of local residents; conversely, the military routinely transfer their personnel from across the country. Therefore, this portion of the employment impact should not be interpreted as jobs that are necessarily being filled by Winnipeg residents. Nonetheless, a relatively constant number of individuals do reside permanently in Winnipeg in conjunction with their service at Base Winnipeg. In addition, DND also employs a significant number of civilians. For these reasons, the employment numbers have been included in total direct employment, but are presented as a separate line item.

3.1.2 Direct Output Impacts

This subsection discusses the output impacts of each linkage separately and then in total.

3.1.2.1 Primary and Secondary Linkages

The reported gross revenues of surveyed primary and secondary linkages totalled \$284.0 million. After the revenues that were not airport-related and double counting were separated, the net revenue

²³ The full impact of CFB Winnipeg is summarized in Appendix Table A.1.

impact of responding primary and secondary linkages equalled \$110.2 million.²⁴

3.1.2.2 Travel Agencies

The total travel agency revenues in Manitoba are approximately \$50 to \$60 million per year.²⁵ However, these revenues not only include air ticket commissions, but are also derived from rail tickets, tour packages, hotels, and car rentals. Therefore, while air ticket sales are the major source of travel agency revenues, the agencies' economic activity cannot be entirely attributed to the airport.

In 1988, travel agency commissions of \$16,254,552 were earned from airline ticket sales of \$171,907,587.²⁶ Because these commissions are an airline expense, they would be counted twice if included in the revenue impact. Therefore, while this component can be regarded as a major economic linkage to the airport, to include it as a direct revenue impact would be erroneous.

²⁴ Revenue double counting was determined by the questionnaire design and known inter-business transactions. For example, sales by fuel suppliers or the flight kitchen to the air carriers are "known" inter-relationships, and, therefore, are excluded from the revenue impact.

²⁵ Starting a Travel Agency Manitoba Business Development and Tourism, 1988.

²⁶ Source: Bank Settlement Plan (BSP) Canada

3.1.2.3 Hotels and Motels

In 1984, total hotel and motel revenues in Manitoba were \$320.5 million and \$15.7 million, respectively.²⁷ Of these receipts, \$64.9 million was spent on hotel rooms, while \$7.0 million was spent on motel rooms. In comparison, "airport dependent" hotels and motels reported air traveller accommodation revenues totalling \$17.4 million. After estimating the revenues for non-respondents, based upon assumptions in Appendix V, the total impact was determined to be \$23.1 million.

3.1.2.4 The Department of National Defence

The military, of course, does not earn revenues; yet, although a product is not being sold, an economic output does occur. Rather than measure it in terms of sales, the value of the output is determined using that part of Base Winnipeg's operating budget that would be affected if the airfield were to desist. This reflects, at market value prices, the value of the activity in the Winnipeg economy. As such, the economic output of the Base Winnipeg that is related airport operations is reported to be \$36 million.

²⁷ Traveller Accommodation Statistics. Statistics Canada. Catalogue 63-204. More recent statistics report a combined total of \$397.6 million for hotels and motels in Manitoba during 1986; however, these statistics do separate accommodation revenues from other revenues.

3.1.2.5 Total Direct Output Impact

The total direct output related to the Winnipeg Airport, after all known and reported inter-business transactions and non-airport related revenues have been eliminated, is equal to \$406.9 million.

Table 3.2 Total Direct Output Impact¹

Linkage	Output Impact (\$)	
	Reported	Total ²
Surveyed primary and secondary	110,229,715	347,800,831
Travel agencies	n/a ³	n/a ³
Hotels & motels	17,435,071	23,093,589
CFB, Wpg	<u>36,000,000</u>	<u>36,000,000</u>
Total	163,664,786	406,894,420

¹ See Appendix Table A.2 for the supporting detail.

² Includes estimates for non-respondents. The major airlines declined to reveal their revenues; therefore, this figure includes the BSP airline revenue figures, adjusted for ticket sales not made through agents.

³ Not applicable - would involve double counting.

The direct economic output originating from the Winnipeg Airport can be interpreted in a provincial context by comparing the finding to Table 3.3. This impact exceeds the sales of the seventeenth ranked firm in Manitoba. This probably underestimates the importance of the airport because many of these firms have a major share of their sales outside Manitoba, while the direct economic impact of the airport is virtually all within the province of Manitoba. If ranked in terms of Manitoba employees, the airport

would likely be much higher on this scale. On a national scale, the revenues/sales associated with businesses, government services and operations of the Winnipeg International Airport are greater than the sales of the 224th ranked industrial firm in Canada.²⁸

Table 3.3 Manitoba Firms, Ranked by Sales

Rank	Company	Sales (\$000)
1	Great West Life Assurance Co.	3,489,043
2	Canadian Wheat Board	3,208,323
3	Investors Group Inc.	1,993,500
4	Inter-City Gas Corporation	1,671,925
5	Federal Industries Ltd.	1,631,500
6	Westfair Foods	1,444,453
7	James Richardson & Sons Limited	1,255,583
8	Cargill Limited	1,113,828
9	United Grain Growers Limited	905,941
10	Gendis Inc.	607,043
11	Manitoba Hydro	580,000
12	Western Canada Lottery Corp.	501,900
13	Manitoba Pool Elevators	492,307
14	Xcan Grain	448,197
15	Metropolitan Stores of Canada Ltd.	433,300
16	Acklands Limited	414,934
17	The Manitoba Telephone System	376,873
18	The Wawanesa Mutual Insurance Co.	368,487
19	Hudson Bay Mining & Smelting Co.	324,367
20	The Manitoba Public Insurance Corp.	300,032

Source: Manitoba Business, July/August 1988.

3.1.3 Direct Employment Impacts

This subsection discusses the employment impact of each linkage separately and then in total.

²⁸ The Financial Post 500 Summer 1989, p.100.

3.1.3.1 Surveyed Primary and Secondary Linkages

Surveyed primary and secondary organizations reported total employment of 5,848 workers. Of this number, 3,173 persons are employed directly on the airport site. In addition, another 467 positions have been estimated from off-site activity.²⁹ Therefore, the direct employment impact reported by surveyed primary and secondary linkages is equal to 3,640 person-years.

In comparison to this impact, Statistics Canada reports that, in Manitoba, 3,555 persons were employed in the air transport industry, and another 970 were employed in services "incidental" to the industry.³⁰ Because Statistics Canada is measuring employment in the "air transport industry," rather than for the airport, their statistics are not directly comparable with the present study's findings. Nevertheless, it is apparent that the industry provides significant employment in the province which is highly concentrated in Winnipeg and around the airport.

3.1.3.2 Travel Agencies

Travel agent airport-related employment is estimated by applying air ticket sales commissions to the industry labour expense/sales revenue operating ratio. Using an operating ratio

²⁹ For each off-site organization, an estimate of airport-related employment was made by prorating total employment by their airport-related revenues as a portion of their total revenues. (see Appendix II, "Section D" in the questionnaire of primary and secondary organizations).

³⁰ Source: 1981 Census of Canada, Labour Force - industry Trends, Catalogue 92-925; special tabulations, 1986 Census.

of 33.5 per cent, labour income of \$5.4 million is derived.³¹ Assuming that Manitoba travel agents earn an average annual salary of \$17,222, these revenues equate to 316 person-years of employment.³²

3.1.3.3 Hotels and Motels

In 1984, Manitoba hotels employed 4,558 full-time and 2,380 part-time staff, and motels in the province employed another 173 full-time and 198 part-time.³³

The present study limits this impact to accommodation employees only, prorated by airport-related revenues as a percentage of total revenues. Responding airport dependent hotels and motels reported 1,312 employees that were engaged in accommodation activities. After this figure has been prorated to airport-related revenues and the employment for non-respondents calculated, the employment impact from air traveller accommodation revenues is estimated at 935 person-years.

3.1.3.4 The Department of National Defence

The Winnipeg base reports a total employment impact of 5,622 person-years. This impact includes a part-time reserve force of

³¹ Based upon a national sample of 186 businesses. Small Business Profiles Statistics Canada Ticket and Travel Agencies (SIC 9961), 1986.

³² Statistics Canada, Catalogue 72-002.

³³ Statistics Canada. Catalogue 63-204.

2,300 and 1,870 cadets. Cadets from across Canada are trained at the Winnipeg base each year. Certain businesses, such as some airport hotels, depend upon the influx of these trainees for a significant portion of their business. However, because these are jobs that are not necessarily being filled by Manitoba residents or individuals that are likely to be Manitoba residents, its inclusion could be misleading. Of this total employment impact, 550 jobs were reported by the Base Winnipeg as being "airport-related."

3.1.3.5 Total Direct Employment Impact

With a total direct employment impact of 5,543 person-years, the Winnipeg Airport compares favourably with other major employers in the Manitoba economy as well as those in the province's transport sector. The railways are generally recognized as one of the largest employers in Winnipeg and in the entire province: total railway employment in Manitoba is approximately 9,800. While airport employment is not as great as that of the railways, airport-related activities generate employment such that the airport also ranks as a major employer.

Table 3.4 Total Employment Impact¹

Linkage	Employment Impact (person-years)	
	Reported	Total ²
Surveyed primary and secondary	3,640	3,742
Travel agencies	n/a ³	316
Hotels & motels	712	935
CFB, Wpg	<u>550</u>	<u>550</u>
Totals	4,902	5,543

¹ See Appendix Table A.2 for the supporting detail.

² Includes employment estimates for non-respondents, partially completed questionnaires, and travel agencies.

³ Not applicable - were not surveyed.

3.1.4 Direct Labour Income Impacts

This subsection discusses the labour income impact of each linkage separately and then in total.

3.1.4.1 Surveyed Primary and Secondary Linkages

The total labour income for airport-related employment is \$138.8 million. Based upon the reported employee numbers, this represents an average weekly income of \$733.31. These wage levels, skewed by high earnings in the airline and aerospace industry, exceed those of all major industrial sectors in Manitoba.³⁴

³⁴ Data for average weekly earnings in Manitoba are detailed in Appendix Table A.3.

3.1.4.2 Travel Agencies

In 1985, the total payroll expense of travel agencies operating in Manitoba totalled \$10.4 million.³⁵ Therefore, the estimated airport-related labour income, of \$6.3 million, represents the majority of the travel industry employment earnings.

3.1.4.3 Hotels and Motels

In 1984, the total wages and salaries paid by hotels and motels operating in Manitoba were \$64.2 million.³⁶ These wages were paid to not only accommodation employees, but also employees in restaurant and beverage room activities. The total labour income of airport-related accommodation employment is estimated at \$11.5 million.

3.1.4.4 The Department of National Defence

Base Winnipeg reported personnel costs of \$26 million. To compare the average weekly earnings of airport related-employment with earnings made in the province's industrial sectors, military incomes have been excluded because the statistics for armed forces personnel include provisions for housing. Moreover, the comparison with industry is more meaningful and valid once military personnel costs have been eliminated. Nonetheless, these incomes have been included in the final total.

³⁵ Small Business Profiles, Statistics Canada, Manitoba Ticket and Travel Agencies (SIC 9961).

³⁶ Statistics Canada, Catalogue 63-204.

3.1.4.5 Total Direct Labour Income Impact

The total direct labour income impact equals \$184.0 million. This represents approximately 1.6 per cent of Manitoba's total labour income; however, total direct airport employment represents only 1.1 per cent of the total employed labour force.³⁷ Therefore, airport-related employees earn a disproportional amount of the province's labour income.

Table 3.5 Total Labour Income Impact¹

Linkage	Labour Income (\$)	
	Reported	Total ²
Surveyed primary and secondary	138,763,139	141,104,043
Travel agencies	n/a ³	5,445,273
Hotels & motels	8,744,849	11,482,950
CFB, Wpg	<u>26,000,000</u>	<u>26,000,000</u>
Totals	173,642,988	184,032,266

¹ See Appendix Table A.2 for the supporting detail.

² Includes labour income estimates for non-respondents, partially completed questionnaires, and travel agencies.

³ Not applicable - were not surveyed.

The calculated average weekly earnings for airport-related employees, excluding the armed forces, is \$608.67, while the

³⁷ In 1988, the total labour income for Manitoba was \$11,498.6 million (SC 72-002). The corresponding total employed labour force was equal to 494,000 workers (SC 71-001).

average provincial earnings are only \$421.93.³⁸. Even though the statistic for airport-related earnings includes accommodation and travel agent incomes, which are earned in relatively low paying service industries, airport-related incomes are still well above the provincial average.

As evident from Figure 3.1, the average airport-related employee income exceeds, with the exception of mining, those of every industrial sector in Manitoba. Furthermore, airport-related earnings are higher than all industrial sectors in the City of Winnipeg.

³⁸ Statistics Canada, Catalogue 72-002, average for 1988.

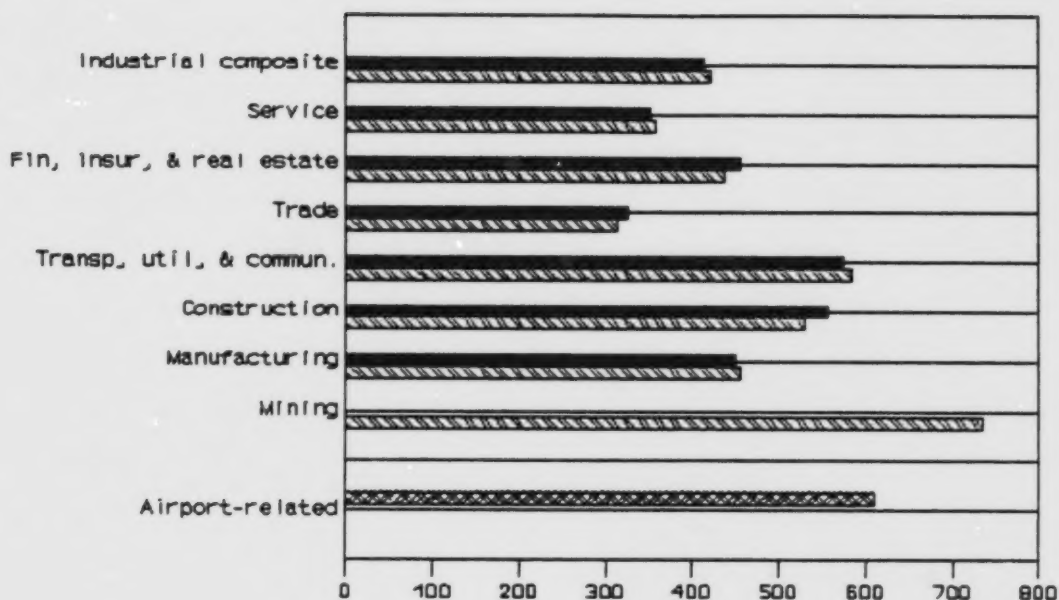


Figure 3.1 Comparative Earnings, Industry vs. Airport

Source: Statistics Canada. Catalogue 72-002. The solid bar represents earnings in the city of Winnipeg and the striped bar represents earnings for all of Manitoba. The supporting statistics are contained in Appendix Table A.3.

3.1.5 Contribution to the Local Tax Base

The response to this portion of the survey was too incomplete to develop a comprehensive analysis of the contribution that airport-related industry makes to the provincial and municipal tax base. Nevertheless, some observations can still be made.

- (i) Participating respondents reported total provincial taxes of \$19,007,995 and municipal taxes of \$5,513,481.
- (ii) The aviation fuel tax collected at the Winnipeg Airport totalled \$8,808,516. Manitoba levies the third highest provincial aviation fuel tax in Canada, and some industry

representatives claim this relatively high rate of taxation deters airlines from refuelling in Manitoba.³⁹

(iii) Assuming hotel accommodation revenues of \$23,093,589, the province would collect taxes of \$2,771,230, based upon the 12 per cent provincial room tax.

(iv) Transport Canada paid a "grant in lieu" of \$1,797,265. This annual payment is made on behalf of the airport by the Department of Finance to the Municipality of Rosser and the City of Winnipeg. It replaces what normally would be the municipal tax assessment of private property.

In addition to this tax, property taxes of \$5,428,207 were paid by airport-related companies.

(v) The Department of National Defence paid a grant in lieu in the amount of \$1,811,693 in 1986.

(vi) Airport-related primary and secondary linkage companies reported payroll taxes of \$4,043,992 for 1988.

3.1.6 Expenditures and Contribution to Provincial GDP

The expenditures of airport-related organizations benefit local businesses by providing suppliers with orders. Of total expenditures on operating supplies and capital equipment of \$208,062,377,⁴⁰ surveyed organizations reported Manitoba-sourced expenditures totalling \$112,643,175. Consequently, for every dollar spent on operations and capital goods by the surveyed organizations, \$0.55 is retained in the local economy.

³⁹ See Table A.4 for an inter-provincial comparison of aviation fuel tax rates.

⁴⁰ The breakdown between operating and capital expenditures for the surveyed firms was: \$187,647,063 operating expenditures and \$19,634,814 capital expenditures. In addition, construction at the Winnipeg International Airport added \$11.8 million in capital expenditures, in 1988.

3.2 Indirect and Induced Impacts

Economic impacts can be expressed in the form of labour income, employment, and GDP at factor cost. The total impact for each of these measures is comprised of the direct impact, plus the indirect and induced impacts. In order to calculate the indirect and induced impacts, economic multipliers are applied to the direct impacts.⁴¹ In Table 3.6, the total impact on labour income and employment is presented. In addition to the direct, indirect and induced impacts of the airport-related organizations, the employment related to airport construction (capital investment) in the current year is reported.⁴²

Airport-related businesses and government organizations paid out \$184 million to employ Manitoba residents. The re-spending of this income in the Manitoba economy generated a further \$98.1 million of indirect and induced employment income. Airport capital investment (construction) added \$6.4 million in direct, indirect and induced income. In total, the economic activity at the airport generated \$288.5 million in labour income.

⁴¹ The most currently available economic multipliers for the Manitoba economy are based on the 1979 Interprovincial Input-Output Model. Although these multipliers may seem dated, the loss of precision is unlikely to be significant because the structure of the Manitoba economy has not experienced any dramatic changes during this period.

⁴² Employment related to airport capital investment is calculated by the intensity ratio multiplier for non-residential construction (Table 1, Manitoba Economic Multipliers, Manitoba Bureau of Statistics, 1986).

Table 3.6 Labour Income and Employment Impacts Related to the Economic Activity of the Winnipeg International Airport

Economic activity	Direct impact	Multiplier ¹	Indirect and induced impacts	Airport Constr.	Total impact
Labour Income (\$million)	184.0	1.533	98.1	6.4	288.5
Employment	5,543	1.615	3,409	286	9,238

¹ Calculated based upon a weighted average for the multiplier for industry. The target population is made up of organizations in different types of industries and, therefore, the multipliers must be adjusted to reflect this.

Source: Manitoba Economic Multipliers, Manitoba Bureau of Statistics, 1986. The multipliers are based on the structure of the Manitoba economy in 1979, Interprovincial Input-Output Model.

The economic activity associated with the Winnipeg Airport sustains 5,543 direct and 3,409 indirect and induced jobs in Manitoba. The direct jobs are related to expenditures by firms, while indirect and induced employment are created by airport-related employee spending on household goods and services. In addition, construction at the airport created 286 person years of employment (direct, indirect and induced). Therefore, the total employment impact of the Winnipeg Airport is 9,234 person-years.

There are two methods of calculating the total contribution to the GDP. If the breakdown of business expenses is known, the contribution to GDP can be calculated by using the "absolute" economic multipliers. These multipliers are applied to the components of business expenditure that constitute direct GDP

(wages, profits, interest, depreciation, etc.) to determine the indirect and induced impacts. Subsequently, the indirect and induced impacts can be summed with the direct contribution to GDP to yield the total contribution to GDP.

If the breakdown of business expenses is uncertain, the "intensity ratio" economic multipliers can be used to determine the total contribution to GDP. These multipliers generate the total effects (direct, indirect and induced) of dollar's purchase in the Manitoba economy.

The absolute and intensity ratio multipliers are generated from the same interprovincial input-output model and will yield identical results, if the data are available. In practice, the absolute economic multipliers require a precise breakdown of business expenses, while the intensity ratio economic multipliers assume an "average" direct contribution to the GDP for a given change of output of each industry.

Both methods were examined in this study, but the intensity ratio approach was chosen because it explicitly accounts for the GDP contribution related to capital investment in new construction at the airport.⁴³ The total contribution of airport-related economic activity to the GDP of the Province of Manitoba is presented in Table 3.7. A total of \$421.4 million was created by the on-going operations of airport-related organizations, while

⁴³ The difference between the two approaches was negligible. The total contribution to GDP using the absolute multipliers was \$431 million versus \$430 million that resulted when the intensity ratio economic multipliers were used.

construction at the airport contributed a further \$9 million. Thus, in 1988, the total contribution of airport-related activity is estimated to be \$430.4 million.

The impact of airport-related activity represents approximately 2.1 percent of Manitoba's Gross Domestic Product. Of every \$100 of provincial GDP, \$2.12 originated from activity at the Winnipeg International Airport.

Table 3.7 Contributions to the Gross Domestic Product of Manitoba Related to the Economic Activity of the Winnipeg International Airport

Economic Activity	Net Purchases ¹	Intensity Ratio Economic Multipliers	Total Contributions to Manitoba Gross Domestic Product
Airport-Related Organizations	\$406,894,420	1.036 ²	\$421,351,850
Airport Construction	<u>11,800,000</u>	<u>.766³</u>	<u>9,038,800</u>
Total	\$418,694,420		\$430,390,650

¹ Total direct output related to the Winnipeg International Airport, after all known and reported inter-business transactions and non-airport purchases have been eliminated.

² Weighted average from Table 2, Manitoba Economic Multipliers.

³ from Table 1, Manitoba Economic Multipliers.

3.3 Noteworthy Linkages

This subsection describes two different linkages affected by airport operations. The first one, the convention industry, is described in terms of the expenditures in the local economy by delegates who arrive by air. The majority of this impact would already have been captured in the revenues earned by the hotels, taxi fares, and airport concessions. Nonetheless, the purpose of this section is to emphasize this linkage, rather than to have it overlooked in the total impact.

The other noteworthy linkage described by this section is that of "remote access" or fly-in fishing lodges. The total impact of these lodges cannot be entirely related to the Winnipeg Airport; some remote access lodges are outposts of the road accessible lodges and guests are flown from the base location. Still, the Winnipeg Airport does provide an important supporting role in this industry because a significant percentage of its out-of-province patrons arrive by air.

3.3.1 The Convention Industry

Winnipeg's convention industry is comprised of the Winnipeg Convention Centre as well as a number of city hotels that cater to that trade.

The Winnipeg Convention Centre, the major component of the industry, hosts approximately 40 per cent of the total delegate attendance. The Convention Centre alone employs 120 people full-time and another 600 part-time. In addition, the Convention Centre

houses fifteen stores, each of which is designed to cater to some aspect of the convention trade and, therefore, depends on delegate expenditures.

Winnipeg vies for conferences with other North American cities in what is a very competitive market. To attract delegates to their cities, some convention centres do not charge for meeting space and in fact operate as "loss leaders." This marketing strategy shows that visiting delegates have such an impact that some cities are willing to offset the meeting space costs.

Based on average expenditures, conventions are probably more lucrative than any other component of the tourist industry. Delegates typically stay in downtown hotels and dine at the finer restaurants. The average daily expenditures by delegates in Winnipeg, detailed in Table 3.8, range from \$162 to \$194.

Air travel is usually considered to be a derived demand: a trip is undertaken not for its own sake, but for some specific purpose. Consequently, there may be some question of whether delegate expenditures are attributable to the existence of convention facilities, rather than the operations of an airport. For national or North American conventions, however, the majority of the delegates depend upon suitable connections to and from the airport of destination. For some convention sites, airport service points may even be a selling feature; therefore, it is difficult to separate the airport from the final product offered by the convention industry.

The convention industry in Winnipeg, or any other city, relies on its airport in two main ways: (i) the airport must be readily accessible to and from a number of North American and international points, and (ii) because the airport is often a visitor's first encounter with a city, a formative impression can be developed there. Therefore, the aesthetics of the airport are important because, from a marketing standpoint, the convention industry relies on the image of the city, and much of it is formed at the airport. Recent developments at the Winnipeg Airport should improve the Winnipeg convention industry's competitive position in both of these respects.

First, United Express's new Winnipeg-Denver route should open up a new market for the local convention trade. Since Frontier Airlines failed in 1986, the market for regional conferences in the south mid-west has been constrained. The return of regular service on this route will enhance marketing efforts in states such as Colorado and Texas, markets in which Winnipeg had experienced some success. This relationship underscores the interdependence between the airport operations and the convention industry.

Second, the convention trade should also benefit from the recent renovations at the airport. As the gateway to the province, the airport serves to promote the image of both Winnipeg and Manitoba.

In 1988, 72,582 delegates attended 234 conventions in Winnipeg.⁴⁴ These conventions were local, national, American, and international. While attending conventions, delegates have a significant impact on the local economy: expenditures are made on accommodation, food and beverages, registration, souvenirs, and other items. These expenditures benefit local hotels, restaurants, transportation companies, and other businesses. In Table 3.8, the total economic impact of convention attendance, for 1988, is estimated to have contributed \$46,039,978 to the Manitoba GPP.

Table 3.8 Total Convention Impact on Winnipeg 1988

Delegate citizenship	(A) Number of delegates	(B) Average length of stay	(C) Number of delegate nights (A)x(B)	(D) Daily Expenditures (\$)	(E) Total Impact (C)x(D) (\$)
Canadian	58,376	3.5	204,316	167	34,120,770
American	8,186	4.0	32,744	182	5,959,408
International	6,020	5.0	30,100	198	5,959,800
					<u>46,039,978</u>

Source: Tourism Winnipeg 1988 Convention Statistics

This impact cannot all be attributed to the airport; some conventions are provincial or local, and, even if not, local residents also attend national, international, and American conventions that are held in Winnipeg. If the majority of out-of-province delegates are assumed to travel to Winnipeg by air,

⁴⁴ Tourism Winnipeg 1988 Convention Statistics.

however, the impact of the Winnipeg International Airport can be reasonably estimated. Given Winnipeg's relative distance from other major centres, this assumption is probably realistic.

The expenditures of delegates attending out-of-province conventions totals \$25,537,062. Using a conservative estimate provided by an Tourism Winnipeg spokesperson that 20 per cent of the attendance of out-of-province conventions will be by local and provincial residents, the total impact of the Winnipeg Airport on the city's convention industry is then calculated to equal \$20,429,650.

3.3.2 Remote Access Lodges

In 1981, Manitoba's tourist lodge industry consisted of 106 establishments.⁴⁵ Sixty-nine of these lodges were road accessible, while the remaining 37 were "remote access lodges" that are only accessible by air transport. More recent publications suggest this number has increased, but to illustrate the magnitude of this linkage, the data from an earlier study is sufficient.⁴⁶ Although remote access lodges represented only 35 per cent of the total number of lodges, this segment accounts for slightly more than half of the total industry revenues. Over 80 per cent of their guests come from the United States and many of these travellers arrive via

⁴⁵ Dan Topolniski and Laura Anderson An Economic Survey of Manitoba's Lodge Industry Department of Fisheries and Oceans, 1985.

⁴⁶ There are currently 46 fly-in lodges listed in Accommodation & Travel Services 1989, Travel Manitoba.

the Winnipeg International Airport. The expenditures of these guests creates a significant economic injection in the local economy. Data in Table 3.9 outline the employment and labour income of the remote access lodges in 1981.

Table 3.9 Economic Activity of Remote Access Lodges

Economic Activity	Economic Impact
Revenues	\$ 6,198,821
Employment ¹	484
Labour income	\$ 1,548,199
Owner's share of net income	\$ 225,155
Number of guests	9,793

¹ includes seasonal employment

Source: An Economic Survey of Manitoba's Lodge Industry, special tabulations, courtesy of the Department of Fisheries and Oceans.

The Winnipeg International Airport serves Manitoba's remote access lodges, and lodges that are located in the North West Territories and Northern Ontario. During the season, Winnipeg serves as an intermediate point for weekly flights to such destinations as Great Slave Lake and Great Bear Lake. The Manitoba economy benefits by expenditures made during the overnight stays of passengers, as well as the direct airport-related activities.

3.3.3 Northern Supply

Air cargo usually consists of specialized commodities. One notable exception is the Canadian north, where lack of other transportation modes necessitates the use of air freight for all types of goods.

Winnipeg is the major hub in the northern Dew Line operation. The transportation services employed in these operations have already been included in the direct impacts of this study. Although the value of goods and services procured in Manitoba to service these northern communities makes a considerable contribution to the local economy, data were not available. Data were not released because of commercial concerns of the one major contractor involved in the operations, and because of military security reasons.

4.0 Social Impacts

Whereas economic impacts pertain only to explicit measures of production and consumption activities, social impacts are concerned with the community's entire welfare. The objective of this section is to complement the economic impact analysis by providing a brief overview of the major social impacts caused by the Winnipeg International Airport.

The primary reason for building an airport is not to promote economic development, but to provide a service to the surrounding community. Its existence provides benefits in terms of time savings, transportation safety, comfort and convenience, access to the national airport system, and community enhancement. The entire community gains from the infrastructure by having ready access to these benefits.

4.1 Transportation Benefits

The most significant transport benefit is the time saved and cost avoided by using air transportation over its next best alternative. Methods to measure this benefit have been suggested, but their weakness is in being able to suggest a realistic monetary value for travellers' time.

Although delays at many major airports have diminished the time savings benefit of air travel, this problem is not evident at the Winnipeg Airport. Furthermore, the recently completed renovations at the Winnipeg International Airport will benefit air

travellers, senders, and greeters by improving the on-site traffic congestion.⁴⁷

Because Winnipeg is located relatively far from other major centres, its airport is essential for business travel. In general, business travellers use automobiles for most overnight domestic trips.⁴⁸ For distances exceeding 800 kms., however, the number of business travellers who fly is almost three times greater than the number who drive.⁴⁹ The importance of the Winnipeg Airport to business travellers is, therefore, apparent from Table 4.1. Highway distances between Winnipeg and other major centres either approach or exceed the distance for which business travellers have a much greater propensity to fly.

Local businesses are also the recipients of such air transport benefits as, market expansion, increased business contacts, and reduced inventory costs and obsolescence. Virtually every major firm and government organization depend, to varying degrees, on air services.

⁴⁷ The short term parking area has been expanded from 181 spaces to 403 spaces.

⁴⁸ The 1986 Canadian Travel Survey reports that, of 10.6 million overnight domestic business trips, 7.1 million were by automobile and 2.9 million by air.

⁴⁹ When distances exceed 800 km (17 percent of all business trips), 1.3 million of these trips were by air, while only .5 million were by automobile.

Table 4.1 Highway Distances to Major Centres

City	Distance (km.)
Calgary	1,344
Edmonton	1,356
Minneapolis	734
Regina	575
Saskatoon	784
Thunder Bay	710
Toronto	2,141
Vancouver	2,397

Source: Rand McNally Standard Highway Guide

Because of Winnipeg's distance from other markets, Winnipeg firms that participate in the international marketplace are especially dependent upon airport operations. For example, Versatile Farm Equipment (Ford-New Holland Canada Ltd.), Canada's only tractor manufacturer of four-wheel drive units, depends on such distant markets as Australia, France, and North Africa.

Similarly, the Winnipeg Division of Boeing of Canada manufactures fibre composite aircraft and aerospace components, and supplies all structural fibre-glass components for the Boeing fleet. The entire output is destined for the U.S. and international markets. Boeing's operations, which employ over 1,200 persons, are situated in Winnipeg to take advantage of low overhead and labour costs. The majority of shipments are distributed by motor carrier, but air cargo is considered to be crucial to the maintenance of satisfactory customer service levels,

and to expedite shipments of critical materials. Approximately \$8 million of production is shipped by air cargo annually.

4.2 Externalities

Externalities are the costs imposed upon, or benefits received by, third parties as the result of production and consumption activities without any payment or compensation being made.⁵⁰ These external costs or benefits are not reflected in market prices, and, therefore, are distinct from the internal costs or benefits that were measured in Section Three.

4.2.1 External Costs

If social costs exceed private benefits, external costs will be present.⁵¹ Because external costs are not traded in any market, they can only be measured indirectly. For example, one could assign a monetary value to airport noise-pollution by examining the differences in property values between areas with similar residential characteristics, but different noise levels. Such an

⁵⁰ K.J. Button. Transport Economics, London: Heinemann Educational Books Ltd., 1982. Button also distinguishes between pecuniary and technological externalities. Following Button, this study only deals with technological externalities that involve real resource costs.

⁵¹ Social costs are borne by society as a whole; not restricted to the costs borne by the individual or firm carrying out the activity or producing the output. Social costs, therefore, consist of the opportunity costs of the resources used, together with the value of any loss in welfare, or increase in costs, caused to any individual or firm.

analysis would suggest the price people are willing to pay in order to live in areas without noise pollution.⁵²

Because external costs such as airport noise, are only indirectly measurable, economists have had only moderate success expressing them in monetary terms.⁵³ In many cases, however, these "costs" are still required by decision makers and the public. This work is often done in cost-benefit analysis, but is outside the scope of this study; rather, these costs and issues are described with secondary statistics and prior research.

4.2.1.1 Aircraft and Airport Noise and Land Use Conflicts

The effect of airport noise on individuals is highly variable and depends upon personal levels of tolerance. Beyond certain thresholds, aircraft and airport noise can irritate nearby residents, disturb their sleep and oral communication, and adversely affect their quality of life.

Individual reactions to airport noise depend largely on subjective perceptions of the disturbance. Perceptions of aircraft noise, or other environmental issues, are influenced by such factors as age, sex, education, personality, income, health status, outdoor interests, and past experiences. Reactions may also arise from non-audible effects, such as safety concerns, interference

⁵² Benefit-Cost Analysis Planning Branch, Treasury Board Secretariat, March, 1976.

⁵³ M.E. Paul "Can Aircraft Noise Nuisance Be Measured in Money?" Oxford Economic Papers, November, 297-323.

with television reception, and fear of damage to homes from structural vibrations, which are confused, or associated, with aircraft noise.

While the external cost of aircraft and airport noise is real, it is actually probably less than that caused by surface transportation. Because highways and railways are used almost continuously, the noise emitted from surface transportation may actually affect more individuals to a greater extent than aircraft noise.⁵⁴ Although aircraft noise is less frequent than noise from surface transit, it is more intense and is associated with a more observable movement; therefore, aircraft noise generally receives a greater community response.

Previous research has found that the Winnipeg Airport has not created a major disturbance in the surrounding community.⁵⁵ This study identified a number of factors that precluded Winnipeg from enduring the same noise problems that other major centres experience and concluded the following:

A number of factors can be put forth to help account for the relatively low annoyance of the survey sample with aircraft noise. Some of the factors would include: the extreme climatic conditions which prevent the use of the outdoors for a great part of the year; the extensive use of heavy insulation and double-paned windows in dwellings and the frequent presence of snow on roofs; the low intensity of development and small-city, spacious atmosphere of Winnipeg; feelings of isolation; noise restricting take-off and landing procedures; the lack of issue-oriented "activist" attitudes

⁵⁴ Richard K. Brail "Impact of Transportation Technology on the Environment" Environmental Modification: Case Studies p.191.

⁵⁵ Mario Carvalho, Derek Hum, and Donald Falconer Social Concerns and Community Characteristics Study Winnipeg Area Airports System Study (WAASS), University of Manitoba, 1976.

and experience among the general citizenry or even a process of "selective ecology" in the airport area, such that people who are not bothered by the noise remain and people who are bothered leave the area.⁵⁶

In addition to the technological advances in aircraft engines, the noise effect can be lessened by compatible land usage and effective operational controls. The aircraft in flight may be directed to take advantage of the geographical features around the airports. For example, by diverting flight tracks along rivers, over bodies of water, industrialized areas, and other unpopulated areas, it may be possible for an airport to reduce its noise exposure. Other operational controls, such as the steepness and choice of the approach path, can be used to lessen noise impacts.

Noise tolerant land uses, such as industrial parks, can be located near the airport, while residential areas, schools, hospitals, churches, and auditoriums can be situated away from noise affected areas. However, airport managers have no direct control over land uses outside their airport boundaries. Real estate developers, therefore, may complicate noise problems by populating noise sensitive land areas.

Much of the noise affected land surrounding the Winnipeg Airport is non-residential. The Rural Municipality of Rosser, to the northwest of the airport, is sparsely populated agriculture land.⁵⁷ The majority of this land is zoned for agriculture and the

⁵⁶ Ibid, 51.

⁵⁷ Population density of 3.1 residents/km², compared to 189.8 residents/km² for the City of Winnipeg.

Municipality of Rosser has indicated its continued support for this land use. Murray Industrial Park lies to the west of the airport, while the property to the east is primarily commercial and industrial.

Brookside Cemetery and Assiniboine Golf Course are adjacent or near the airport land, and Brookside Boulevard, to the north, is a centre for trucking terminals. These land uses are regarded as compatible with airport operations.⁵⁸ However, there are significant tracts of residential land in St. James and River Heights which are affected by airport noise.

While the Winnipeg Airport and its surrounding community generally co-exist, some conflict and opposition have emerged in recent years. Through the summer of 1988, the River Heights area experienced disruptive noise levels when runway 18-36 was being resurfaced. During the construction, runway 13-31 was used and arriving flights had to change their normal paths of approach. This situation was aggravated by the hot temperatures and wind directions that forced most departures over this area.

Since last summer, corrective action, outlined in Appendix VIII, was taken to alleviate the noise problem. The runways are now being rotated; mandatory guidelines for aircraft takeoff procedures and the angle of take off now exist; and, military jets no longer circle the city before landing.

⁵⁸ Planning Guidelines for the Use of Land Outside the Airport Property Canadian Air Transportation Administration, TP 1247E.

During the summer of 1989, Transport Canada is resurfacing runway 13-31, and traffic is expected to increase over Tuxedo, Charleswood, and parts of St. James. While this may again evoke a community response, the construction is scheduled to be completed in one season. Therefore, this expected noise disturbance, like the ones experienced during recent summers, appears to be more an aberration than a chronic problem.

4.2.2 Air Pollution

Transporting goods and passengers across Canada's vast geographical area and lengthy distances between major urban centres requires large amounts of energy to be consumed. As a result, a variety of wastes, such as carbon monoxide, nitrogen oxides, hydrocarbon, and lead compounds, are emitted into the air. These contaminants are hazardous to human health, and have adverse effects on animals, agriculture, forest growth, and building materials.

Airport operations generate carbon monoxide as a result of incomplete combustion of fuels, nitrogen oxides during high power settings on take-offs and landings, as well as suspended particles from combustion and turbulence.

A study of ambient pollutants around the Winnipeg International Airport in 1981 indicated that pollutant concentrations were low. Recorded concentrations were generally well below the Federal Guidelines for ambient air and, combined with high average

wind speeds, led to efficient mixing and dilution of airport emissions.⁵⁹

4.2.3 Air Safety

Air safety is a natural public concern. Public anxiety has been heightened by the unknown effects of deregulation and increased traffic at major "hubs." While this is a complex issue that encompasses many variables, the Winnipeg Airport has not experienced the same problems as other major Canadian airports. Of nineteen near-misses reported in the Prairie provinces last year, none occurred at the Winnipeg Airport. However, accident statistics should be interpreted with caution because they are only the end results of underlying weaknesses in the system.

One probable explanation for the Winnipeg Airport's fewer problems is its adequate capacity. In comparison, the incidents at Toronto's Pearson International Airport are frequently attributed to its not having enough air-traffic controllers or terminal space to accommodate its 171,000 flights and over 16 million passengers. Conversely, the Winnipeg Airport has only one-fifth the number of flights and only one-eighth as many passengers as the Pearson Airport. Moreover, the Winnipeg Airport has

⁵⁹ Air Quality Simulation Study, Tradewind Scientific Ltd., 1981.

sufficient capacity to accomodate at least one million more passengers than are currently being handled.⁶⁰

Airport safety is also associated with the issue of security. The contract for airport security is obtained from a competitive bid. Consumer groups have expressed concern that this system results in low paid and inadequately trained employees. This raises the question of trade-offs between safety and cost. Consumers are usually willing to accept some risk in return for less expensive airline tickets and less inconvenience, but where the optimal point exists is unclear.

4.2.4 Ground Congestion

After World War II, access to airports was affected by the separate impacts of rapid urbanization, the trend toward universal car ownership, and the fall in real air travel costs. Airport related ground traffic adds to the total volume of traffic generated by, and moving through, nearby communities, potentially affecting both residents and people passing through the communities.

Vehicle travel to and from Winnipeg Airport is mainly by private automobile. Urban origins and destinations appear to be evenly distributed across the city, with the exception of the central business district that experiences greater traffic volumes.

⁶⁰

The true theoretical capacity of the airport is likely higher and could be achieved with appropriate scheduling of arrivals and departures.

4.3 External Benefits

Social benefits are a distinct concept from economic impacts. Economic impacts concern "internal" measures of firms, entrepreneurs, and government organizations. These are measures of benefits to shareholders, proprietors, consumers, employees, and taxpayers. Conversely, social benefits are not restricted to the parties involved in the production and consumption process, but may also benefit third parties.

Some public goods and services create external benefits that are so great in relation to the internal benefits and costs that these activities will be undertaken only by the government.

4.3.1 Department of National Defence

National Defence is the classical example of a public good.⁶¹ In addition to the obvious benefit of national security, the Department of National Defence (DND), conducts search and rescue missions. As well, CFB Winnipeg also engages in forest fire fighting and has been deployed in emergency situations, such as floods and other natural catastrophes.

⁶¹ Public goods are available to everyone in a given area and no one can be excluded for non-payment.

4.3.2 Manitoba Government Air and Radio Services

Manitoba Government Air and Radio Services operates from a base in Winnipeg, as well as Lac du Bonnet,⁶² and Thompson. The division's fleet is made up of thirteen aircraft and provides aerial support for the following activities:

- (i) Air Services operates and maintains a fleet of eleven fixed wing aircraft, providing the following services to the various departments and agencies of the Provincial Government:
- (ii) dedicated air ambulance program for the entire province;
- (iii) air transportation of government personnel and cargo;
- (iv) flights in support of the Northern Patient Transportation Program;
- (v) forest fire suppression by water bombing;
- (vi) transportation of court officials and Mineral Resources' field workers;
- (vii) support and assistance to the Emergency Measures Organization;
- (viii) air transportation for hunting and enforcement officials; and,
- (ix) wildlife census patrols.

The air ambulance program operates on a 24 hour basis throughout the year. The service is available to all Manitoba residents as an insured device that meets criteria set out by M.H.S.C. During 1988, 632 patients were transported in 569 flights, of which 6 were out of province.

⁶² The base at Lac du Bonnet is scheduled to close in October 1989 and staff will be relocated to other areas of the province.

The water bombers are operated and maintained by Government Air. During the fire suppression season these aircraft are assigned to the Fire Program for their exclusive use and dispersement, and are specifically dedicated to this role. The planes are dispersed to the points of The Pas, Thompson, and Gimli for the season. Table 4.2 depicts this department's activities.

Table 4.2 Forest Fire Suppression Activities

	1987	1988
Total hours flown on water bombers	495	1,360
Total water drops	4,250	8,849
Total litres of water dropped (000's)	20,053	45,540

5.0 The Future Economic Impact of the Winnipeg Airport

The future economic impact of the Winnipeg Airport on its local and regional economies depends on the growth of passenger and air freight traffic at the airport. As passenger and freight traffic increases, so do the revenues received by most airport-related businesses. Some businesses such as airlines, hotels, on-site retail outlets, and ground transportation companies derive benefits that are directly proportional to passenger volumes; other types of businesses also receive benefits that may be significant, but are not necessarily proportional to the number of air travellers or air freight handled.

The demand for air passenger travel and air freight depends on a number of socio-economic factors. Air travel at a particular airport is affected by changes in regional incomes, relative prices, economic development and population. To predict passenger and freight traffic, statistical methods of aviation forecasting have been developed. These models incorporate variables for these socio-economic factors and changes in air fares, fuel prices, and aircraft design.

Airport managers need reliable forecasts to plan the size of their terminal buildings, runway capacities, and automobile space requirements. Similarly, the airline industry relies on passenger and air freight forecasts to plan their investment in aircraft, and government agencies use these figures to prepare budgets and formulate aviation policies.

Air passenger forecasts often under-estimate or over-estimate demand because certain critical variables, such as long term economic growth, are difficult to predict. In addition, technological developments and government policies and regulations that affect passenger or freight growth are hard to foresee. Despite their weaknesses, forecasts are widely used to assist airport developers, as well as other users, in allocating their resources to long-term projects.

This section employs official Transport Canada passenger forecasts to (i) discuss future passenger traffic at the Winnipeg Airport, and (ii) develop forecasts of economic activity at the Winnipeg Airport. Air freight forecasts are not used in this section because the accuracy of these forecasts is considered to be too unreliable.⁶³ The inherent limitations of forecasting techniques should be appreciated while interpreting the results.

5.1 Passenger Forecasts at the Winnipeg Airport

Since the economic recovery that has followed the 1981-82 recession, air travel has been increasing in general, and is expected to continue to do so, both for business and pleasure trips. This phenomenon is attributable to a number of trends, including:

⁶³ The official Transport Canada forecasts for air cargo are based on the activities of only "Mainline Unit Toll" carriers and charters. Neither couriers, nor commuter carriers are obliged to report. Consequently, the official forecasts seriously under-estimate the probable demand for air cargo.

- (i) more efficient aircraft that lead to relative fare reductions;
- (ii) increased international trade. As international trade has increased, so has the need for business travel. Despite technological advances in telecommunication, business people still value the benefits of direct personal contact;
- (iii) higher levels of education and the impact of a "global" news media. People now have more knowledge of other countries and cultures, and this awareness has stimulated a desire to travel; and,
- (iv) increased leisure time. Shorter work weeks and earlier retirements have left people with more time to travel.

In addition to this greater overall propensity to travel, traffic levels at the Winnipeg Airport have increased also because of the effects of deregulation. Deregulation of the airline industry was initiated in 1984. This shift in policy created a significant increase in competition on the heavily travelled routes of southern Canada. Furthermore, the new policy provided the impetus for structural change in the industry; to adapt to the more competitive environment, the major carriers and their local and regional counterparts assumed new roles.

Prior to deregulation, most air carriers operated independently. Regional carriers served only limited networks where competition had been constrained by strict regulations. Once deregulation had started to take effect, this structure began to change.

In response to the new legislation, the major carriers withdrew their services from uneconomical shorthaul routes, which they had previously been obliged to maintain, and began to

concentrate on transcontinental and international markets. At the same time, the smaller regional carriers became affiliated with the major airlines and began to provide feeder services to major Canadian airports.

Under commercial agreements, "parent carriers" such as Air Canada, share designators, reservation systems, and luggage handling with their affiliates. These cost sharing agreements and the use of more economical aircraft on these routes have generally provided consumers with more frequent flights, lower fares, and better connections. The structural outcome of these partnerships has been the development of a "hub-and-spoke" network.

Winnipeg has evolved into a regional "hub" for Manitoba and Northern Ontario. In addition, Toronto, Montreal, Vancouver, Calgary, and Halifax have emerged as hubs in their respective markets. These airports have experienced increased traffic flows from the greater number of regional arrivals and stopovers, as well as from the greater increased traffic over the entire system.

Largely because of the expansion of regional carrier operations, Transport Canada expects that the Winnipeg Airport will continue to develop as a regional hub. Regional traffic has more than doubled since 1984, and is expected to grow at an average annual rate of 7.2 per cent to the year 2001.

The most recent traffic statistics and short-run forecasts, illustrated in Figure 5.1 and contained in Appendix Table A.5, indicate that growth at the Winnipeg Airport has been above the national average. During 1988, passenger volumes at Winnipeg

increased by 12 per cent, compared with 10 per cent nationally. As well, Transport Canada projects the annual growth rate at the Winnipeg Airport will be 4.6 per cent over the next five years; in comparison, the national average growth rate is forecasted to be 4.0 per cent.

In addition to the growth at the Winnipeg Airport because of its expanding role as a regional hub, Transport Canada foresees continued growth from Winnipeg's balanced and diversified economy. Secondary sources would seem to support Transport Canada's prognosis. From 1988 to 1995, Manitoba is expected to have steady economic growth of 2.3 per cent a year, though it is somewhat less than the national average of 3.0 per cent.⁶⁴

In addition to economic growth, the population of Manitoba is projected to increase from 1,077,500 in 1986 to 1,135,100 in 2001, representing a moderate increase of 5.3 per cent.⁶⁵ With an affluent and aging population, this growth should also have a positive effect on traffic at the Winnipeg Airport.

⁶⁴ Back to the Basics Economic Council of Canada Annual Report.

⁶⁵ Manitoba Bureau of Statistics, 1986.

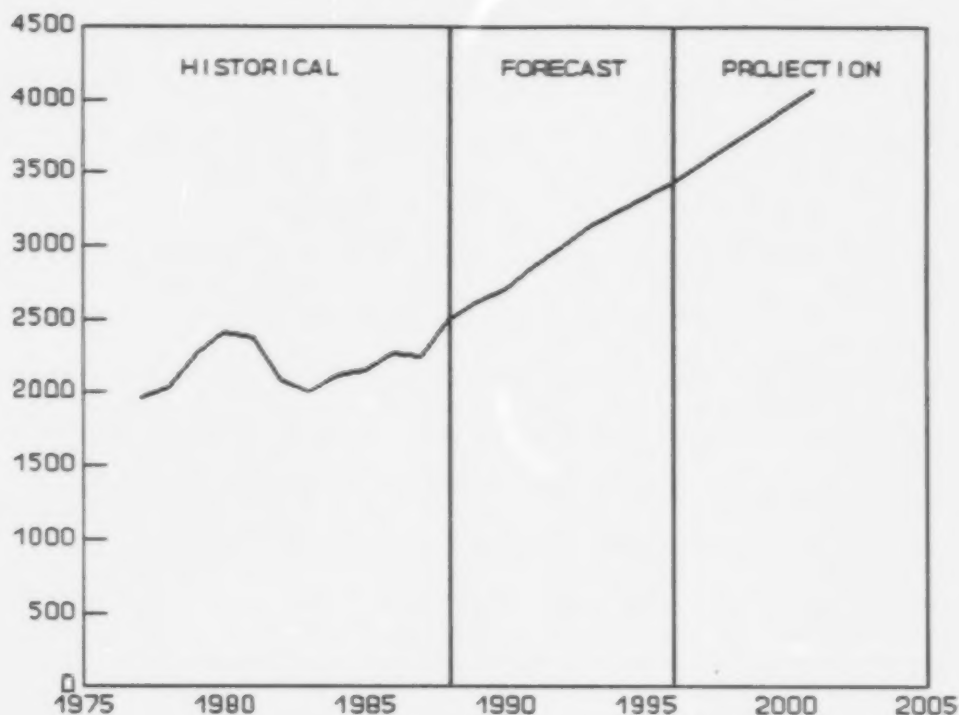


Figure 5.1 Forecasted Enplaned and Deplaned Passengers at WIA

Source: Statistics and Forecasts, Transport Canada Air. See Appendix Table A.5 for supporting detail.

The accuracy of Transport Canada's forecasts depends greatly on the fate of deregulation. In the United States the deregulation of the airline industry led to a rapid growth in traffic that exceeded planned development of the airport facilities.

The [U.S.] system is clogged with passengers beyond the numbers it was designed to accommodate. Since 1978, passenger traffic has increased 60 per cent. In 1980, there were 292 million airline passengers in the U.S.; they flew on 14.7 million flights. By 1986, these

numbers had increased to 392 million passengers on 19.2 million flights. The FAA has estimated that by 1997, the numbers will become 650 million passengers and 26.4 million flights.⁶⁶

If the U.S. experience holds true for Canada, passenger numbers at the Winnipeg International Airport could exceed the upper limit of the Transport Canada forecast.

The main constraint facing the U.S. air passenger market is the problem of congestion at the airports. The primary source of congestion is a result of the failure to forecast accurately and undertake the needed expansion of airport facilities. The second problem is the development of hub-and-spoke routing networks that accentuate the peak travel demands.

In Canada, this problem has already become apparent at the Pearson International Airport. As traffic continues to expand at Toronto, it is conceivable that more passengers, who are only transferring to connecting flights at Toronto, will choose to travel via other airports such as Winnipeg, Ottawa and Montreal.

The Winnipeg Airport has undertaken a substantial capital investment program during the past several years to ensure adequate capacity into the next century. By the end of 1991, a significant amount of the airport will have been rebuilt and the terminal renovated. All major runways will have been reconstructed and the terminal and ground transportation system expanded to meet requirements into the late 1990s.

⁶⁶ David F. Wood and James C. Johnson. Contemporary Transportation. 3rd Edition, New York: MacMillan Publishing Company, 1989, p.229.

In addition to having adequate terminal and airfield capacity into the next century, the airport has the ability to add a fourth runway. If the need were to arise, this alternative is available for handling growth that exceeds expectations.

5.2 The Future Economic Impact of the Winnipeg Airport

The future economic activity of airport-dependent organizations depends mainly on the volume of passenger and freight traffic at the airport.⁶⁷ As previously stated, however, firms will benefit from the airport activity to varying degrees. The objective of this portion of the study is to determine these relationships and combine them into a single set of forecasts.

Transport Canada projects that passenger growth will increase by approximately 80 per cent by the year 2000. Although some airport-related organizations do not depend directly upon passenger volumes for their business, the passenger forecast does provide an indication of general airport activity. In the survey questionnaire, each firm was asked to estimate what impact projected passenger growth would have on their sales, expenditures, and employment.⁶⁸

⁶⁷ Government regulation and macro-economic policy can also have significant impacts on business growth and economic activity. For example, the proposed Goods and Services Tax could have a major impact on some aviation activities.

⁶⁸ See "Section E" of the questionnaire of primary and secondary linkages.

5.2.1 Economic Output and Employment Forecasts

Only a moderate response was achieved for this portion of the study. From the survey of primary and secondary linkages, of 55 returned questionnaires, 53 per cent responded to this portion of the questionnaire. As well, linkages such as the hotel industry and travel agent industry were not surveyed in this regard. Therefore, to complete the forecast, it was necessary to make the following assumptions:

- (i) The major carriers declined to respond to this portion of the survey. Their activities were instead derived by assuming constant returns to scale over the forecast period. This results in a linear relationship between passenger traffic and economic activity. This relationship would be more probable in a longer run period, such as in this forecast, where less costs would be fixed. The responses of the other airlines were weighted according to their relative levels of economic activity.

Not all airline activities depend upon passenger volumes at the Winnipeg Airport. For example employment in aircraft maintenance depends not so much on the passenger volumes at a particular airport as on the activity in the entire system. Where it was possible to do so, such activities were identified and assumed to remain constant.

- (ii) The future economic impact on the Winnipeg area hotel industry, the travel agent industry, and ground transportation companies is also assumed to have a linear relationship with the Winnipeg Airport. This assumption is probably quite realistic because the benefits that these industries receive from the airport are directly related to passenger volumes.
- (iii) The economic activity of the Department of National Defence and "general aviation" is not directly affected by passenger volumes, and, therefore, is assumed to be constant.
- (iv) The future growth of those non-respondents was estimated, where appropriate, by substituting those responses of firms within their industry.

- (v) Hours of operation at the Winnipeg International Airport will remain unrestricted.

Based on these assumptions and the Transport Canada air passenger forecasts, sets of forecasts presented in Table 5.1 have been derived. The total economic activity of airport-related organizations is expected to increase from \$406.9 in 1988 to \$622 million (in 1988 dollars) by the year 2000. Similarly, the employment generated by airport-related activity is forecast to increase from 5,543 person-years to 7,856 person-years in the year 2000.

Other similar studies have assumed a linear relationship throughout their forecast.⁶⁹ This present study, on the other hand, recognizes that not all organizations will have this relationship, and, thus, bases the analysis on the classification and responses to the survey. Despite this more conservative approach, the expected economic impact and employment generated by the Winnipeg Airport will be a major source of growth in the Manitoba economy.

⁶⁹ Stanley Associates Vancouver Airport Economic Impact Study.

Table 5.1 Projected Economic Output and Employment of Businesses and Government Offices Associated with the Winnipeg Airport to the Year 2000

Linkage	Output			Employment		
	current (\$000)	projected (\$000)	growth (%)	current (person-years)	projected	growth (%)
Air carriers	229,209	406,636	77	1,849	2,917	58
General aviation	13,625	13,625	0	127	127	0
Air support services	85,048	93,652	10	1,248	1,348	8
Air operations & administration	7,420	8,124	9	337	361	7
On-site retail	5,321	8,147	53	105	165	57
Ground transportation	7,177	12,919	80	76	136	77
Travel agencies				316	569	80
Hotel industry	23,094	43,027	80	935	1,683	80
Canadian Forces Base Winnipeg	<u>36,000</u>	<u>36,000</u>	0	<u>550</u>	<u>550</u>	0
Total	406,894	622,130		5,543	7,856	

5.2.2 Capital Investment at the Winnipeg International Airport

Expenditures on new construction, equipment and building renovations are made by public and private interests at the airport. Public capital investments may be undertaken in anticipation of demand, but most private businesses will wait for

demand to be confirmed before committing expenditures that require many years to yield a pay back.

Forecasting new capital expenditures by private investors is confounded by the need for secrecy. In general, new developments are not announced to the public until the firm is committed to proceed. Even when possibilities of new private investment are discussed, the researcher is given the information with the understanding that it will not appear in the report. Premature announcement of private initiatives is sufficient to cause some plans to be abandoned. Consequently, this report will deal with only the new General Aviation Avitat facility that has been announced, and planned public investments.

5.2.2.1 Public Investment

Since the construction of a modern airport terminal, the capital program at the Winnipeg International Airport had been somewhat limited. Expenditures were made mainly for restoration projects, such as re-cabling, overlays, etc. Since 1986, a major expansion of the terminal building has occurred, runways have been re-surfaced, and the ground transportation facilities have been modernized.

The time-frame of the capital investment program at the airport is illustrated in Figure 5.2. Since 1982, public investment at the Winnipeg International Airport has totalled \$54 million. Further public investment of \$24 million is planned for the period 1989-91. When this program is complete, all major

aircraft operating surfaces will have been restored, and the terminal and ground transportation system will be capable of handling anticipated demand to the year 2000.

The employment associated with the 1988 construction expenditures is 286 person-years of work. Expected investments for 1989-91 will contribute an additional 629 person-years of work for the construction industry.⁷⁰

5.2.2.2 Private Investment

In July 1989, the construction of a \$2 million "Avitat" building at the Winnipeg International Airport was undertaken by Esso Petroleum Canada.⁷¹ When completed, this facility will provide hospitality services and handling for general aviation (private and corporate aircraft), and a modern pilot centre to provide weather information, flight planning and communication services. Construction, which is scheduled to be completed by December 1989, has provided 110 jobs (approximately 48 person-years of employment). It is also anticipated that the new Avitat facility will require an additional 3 persons to operate.

⁷⁰ The data are based on the intensity ratio economic multipliers.

⁷¹ These activities are classified as Air Support Services in this study.

WINNIPEG INTERNATIONAL AIRPORT

CAPITAL INVESTMENT

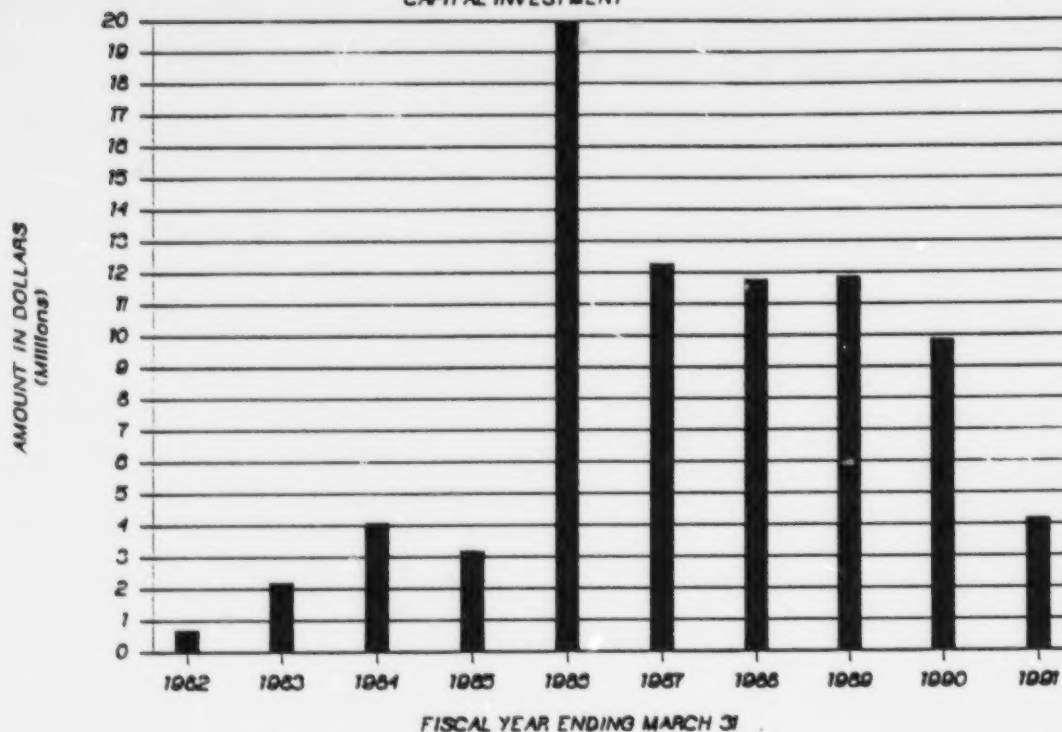


Figure 5.2 Capital Investment by Transport Canada at the Winnipeg International Airport, 1982-1991.

The construction of the Avitat centre is expected to stimulate associated private and public investment. A new hangar facility (construction cost, approximately \$2 million) to compliment the Avitat, is scheduled to be built by 1991. Also, a flight services station has been announced by the Transport Canada Aviation Group for construction in 1990.

While these contributions to enhance general aviation are important, the greater payoff for the community is the

attractiveness of the Winnipeg International Airport to the business/corporate air operations. The lack of modern facilities for general aviation at Winnipeg is well established, and executive aircraft have been known to bypass Winnipeg as a result. The role of corporate aircraft has been growing and could become even more important with the advent of the Canada-U.S. Free Trade Agreement and the increasing Japanese/Hong Kong trade connections that are developing.

5.3 The Expected Impacts of Free Trade and Deregulation

In addition to passenger volumes, the future economic activity of airport-related organizations depends on how these businesses interpret the impacts of government policy changes. Business investment decisions are influenced directly by their perceptions of the economic policy environment. Two pieces of legislation that could have a major impact on attitudes of airport-related businesses are the Canada-U.S. Free Trade Agreement (FTA) and the National Transportation Act (NTA). To gain some understanding into what effect the FTA and NTA might have on the airport-related businesses, primary and secondary linkage organizations were asked their opinions on the expected impacts of these policy changes.

Firms were queried whether they expected these new pieces of legislation to have an effect on their business that is (i) positive, (ii) negative, or (iii) no impact. The results are based on the 44 returned questionnaires and ten firsthand interviews.

The results of the survey are illustrated in Figure 5.3. Forty four percent of those surveyed indicated that they expected the Free Trade Agreement to have a positive impact on their business. From comments made in the questionnaires, those respondents anticipating positive impacts indicated that as trade increases, so does the volume of their business. Of the remaining survey respondents, 15 percent indicated that they expect no impact on their business as a result of the FTA, while the remaining 41 percent of the respondents did not complete this section of the survey.

Expected Impacts of the FTA

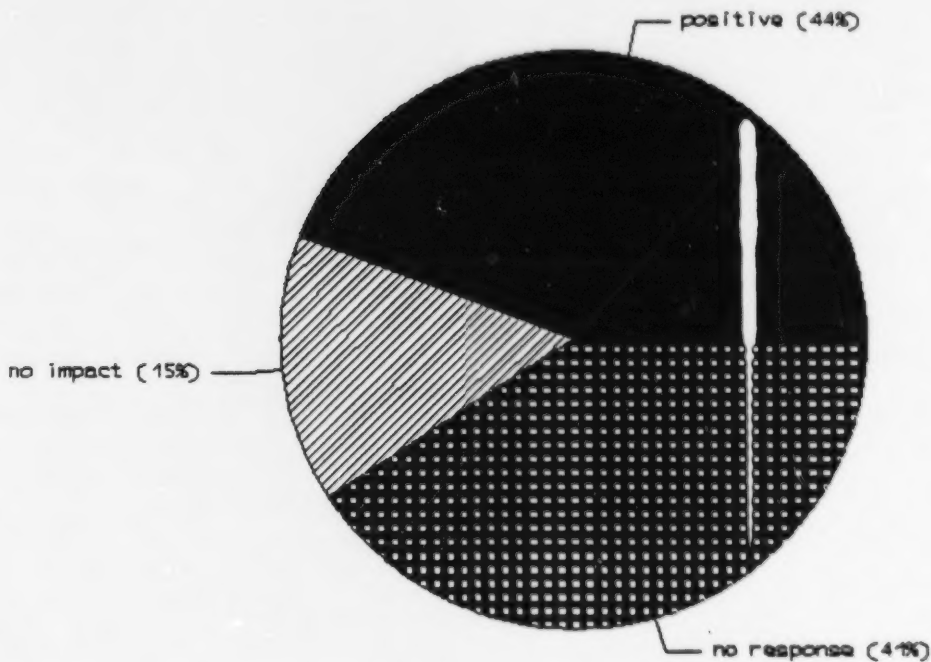


Figure 5.3 Expected Effects of the Free Trade Agreement

There appeared to be less of an awareness and understanding of the National Transportation Act than of the Free Trade Agreement, particularly among firms for which transportation was not their primary business. Although the NTA is not as well known as the FTA, organizations, in general, still view it favourably. As illustrated in Figure 5.4, 31 percent expected the NTA to have a positive impact, 19 percent expected no impact and the remaining 50 percent of respondents did not complete this section of the survey questionnaire.

Expected Impacts of the NTA

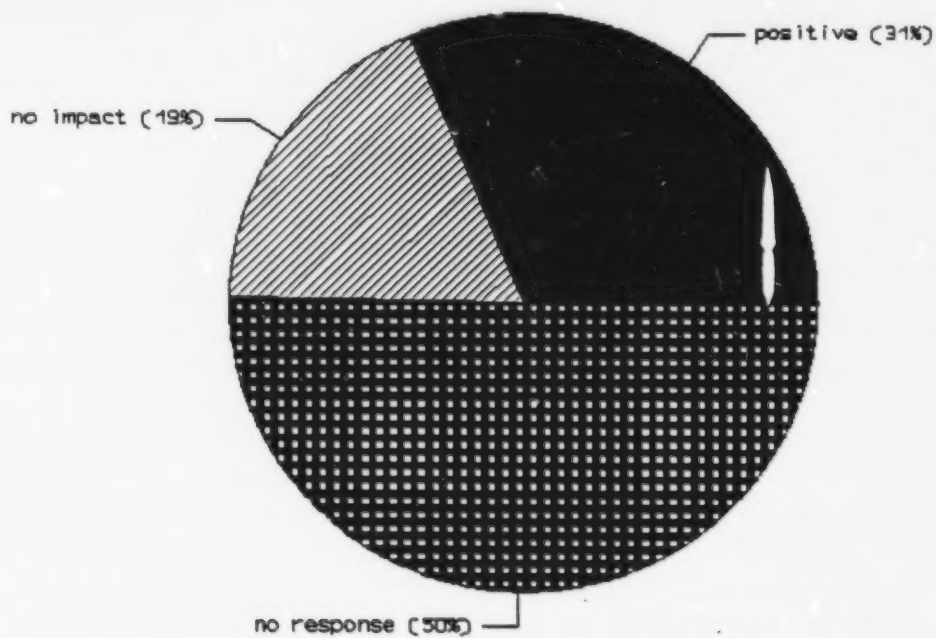


Figure 5.4 Expected effects of the National Transportation Act

The response to this section of the survey was too incomplete to draw strong conclusions about the effects of either the FTA, or the NTA, on airport-related businesses. Perhaps the most revealing finding is that not one respondent expected any negative impacts from these government policy changes. Also, a general support of these reforms was indicated. Consequently, it would appear that the FTA and the NTA are likely to encourage a positive environment for airport-related business investment.

5.4 The Future Impact of the Winnipeg-Denver Route

In June 1989, United Express commenced its twice-daily flights between Winnipeg and Denver. This new route fills a void that has existed since the demise of Frontier Airlines in 1986. The Winnipeg-Denver link can be expected to have several impacts.

In Section 3.3.1, the future impact on the convention industry has already been discussed. This connection should assist marketing efforts in attracting regional conferences from the United States mid-southwestern market to Winnipeg. However, because conferences are usually booked two years or more in advance, the impact on the convention industry will probably not be felt until beyond that time.

The new air service can be expected to have a significant impact on the Manitoba tourism industry. Based on an assumed load factor of 60 per cent, it has been estimated that \$10,052,100 of tourism business will be brought into the province, annually.⁷² Furthermore, this impact would also provide over \$1 million of tax revenues and 304 person-years of employment.

In addition to creating a demand in the Winnipeg economy, the Express route has been viewed favourably by the Winnipeg business community. Prior to the route, access to this market had been quite circuitous; with the direct flight and frequent service to Denver, the route will facilitate business travel and open up a large market.

⁷²

Projections taken from a marketing program done by the Tourism staff from Travel Manitoba.

6.0 Conclusions

Several factors make the study of the economic impacts of airports difficult. First, because the size and importance of airport-related companies vary widely, a census-type survey is most appropriate. This is time consuming and requires the cooperation of the entire target group. In the case of this study, the cooperation that was received from these organizations indicates the importance of airport operations to their businesses, especially considering the confidential nature of the information being requested. Over two-thirds of the primary and secondary airport-related businesses participated in the study, while the response rate of the most significant economic entities was virtually 100 percent.

The economic activities and tax contributions of airport-related organizations further the well-being of the local economy in several ways: employees receive labour income; consumers are beneficiaries of the final outputs; suppliers receive orders; and, governments derive tax revenues.

The revenue impact of the Winnipeg Airport has been determined to equal \$406.9 million. This impact exceeds the sales of the seventeenth ranked firm in Manitoba, and, from a national perspective, would place 224th in the Financial Post 500.

This study also shows that the average labour income earned by airport-related employees is greater than that earned in any industrial sector in Manitoba, with the exception of mining. Moreover, the earnings made in activities sustained by airport-

related economic activity are also well above the provincial average.

The total impact of the Winnipeg Airport is greater than its initial direct economic activity. For example, while the direct employment impact has been determined to equal 5,501 person-years, the multiplier effect has the effect of sustaining an additional 3,383 jobs.

In addition to describing the full impacts of the Winnipeg Airport, several significant linkages with the airport have been established. Most individuals would readily identify the airlines as being one such linkage, but other linkages may not be so apparent. First, the relationship between the convention industry and the airport has been depicted. Delegates arriving by air expend an estimated \$25 million on accommodation, food, and other goods and services in Winnipeg's economy. As well, such recent developments at the Winnipeg Airport as the commencement of the Winnipeg-Denver route by United Express and the renovations done to the passenger terminal building should advance the competitive position of Winnipeg's convention industry.

A second major linkage, somewhat related to the convention industry, was that of "airport-dependent" hotels and motels. This study established that a well-defined segment of the accommodation industry is dependent on air travellers. Thus, rather than having a marginal effect over many establishments, air travellers have been determined as having a significant impact, of over \$23 million, on the specialized hotels and motels that cater to this

trade. This close relationship reinforces the importance of the airport to these businesses.

Other important linkages to the airport include the travel agent industry, ground transportation industry, and on-site retail establishments. As passenger volumes increase at the Winnipeg Airport, so do the revenues received by these types of businesses. Other businesses, not directly affected by airport operations, also receive significant benefits through the multiplier effects as income generated at the airport is re-spent elsewhere in the local economy.

Airports create both positive and negative social impacts for the surrounding community. This study provided only a cursory examination of the social impacts associated with the Winnipeg International Airport. No attempt was made to quantify either the positive or negative social impacts, but several were described. Given the size and location of the airport with the City of Winnipeg, the negative impacts associated with aircraft operations are limited to a relatively small area of the city. Moreover, steps have been taken to minimize these impacts on the affected neighbourhoods.

One topic that deserves further research is the role and importance of air freight. At the Winnipeg Airport, these operations are physically separated from the passenger facilities. As such, there is little interaction between airport management and these types of businesses. Air freight is recognized as a fast growing segment, but there is a paucity of data or other

information available on the structure or scope of the industry. At the present time, Transport Canada is unable to provide data on the actual demand for air freight, because only the main line carriers are obliged to report. An in-depth analysis of the air freight market would be useful for airport planners, and airport-related businesses.

This study has shown that the economic activity related to the Winnipeg International Airport has a substantial impact on Manitoba's economy. Conceptually, the conglomeration of "airport-related" organizations were evaluated as if they represented a single entity. This perspective recognizes that airport management is concerned with the interests and operations of a diverse group of organizations. Issues that affect the operations of an airport have economic implications for all those firms, employees, proprietors, and suppliers who have a commercial interest in the efficient operations of the airport as well as air travellers and users of air freight services. By developing a greater understanding of the direct and indirect airport-linkages, the impact of the Winnipeg International Airport on the local economy and economic growth of the province can be more fully appreciated.

APPENDIX I. Surveyed Primary and Secondary Organizations

1. "Primary linkages"

(i) Air Carriers

Air Canada
Air West
Calm Air International Ltd.
Canadian Airlines International
Keewatin Air Ltd.
Northland Air Manitoba Ltd.
Northway Aviation Ltd.
Northwest Airlines Inc.
Northwest Territorial
Perimeter Airlines (Inland) Ltd.

(ii) General Aviation

Campbell Air
Government Air and Radio Serv.
Medavac
Midwest Helicopter Ltd.
TransCanada Pipelines

(iii) Air Support Services

A.D. Rutherford & Co. Ltd.
Advance Avionics
Aerotech International Inc.
Aviall
Baisely Richer Air Freight
Bristol Aerospace
Burlington Air Express
CARA Operations
Cessna Finance Corporation
CF Airfreight
Cole McCubbin
Cottrell Air Freight
Danza's Canada Ltd.
Douglas Aero Engine Inc.
Early Bird Courier Services Ltd.
Emery World Wide
Express Airbourne
Federal Express
Field Aviation Parts
Flyway Esso Aviation Services
Gelco Express
George Young & Co. Ltd.
Goulet Aircraft Supply
Heli-Fab Ltd.
Intertraffic Service
International Aviation Terminals
Kelly Western Services
KN Custom Brokers

Livingston International Inc.
L&L Importing Services
Meadows Thomas & Co. Canada Ltd.
Mendelsholm Commercial Limited
Orbit Aircraft Instruments
Panalpina
Peace Bridge Brokerage Ltd.
Purolator
Ramsay Agencies Custom House
Scott Oil Coolers Ltd.
Standard Aero Engines
Sunex Aero Engine
Ungers Aircraft Upholstering
Western Propeller (Wpg.) Ltd.
Zipper Courier

(iv) Airport operations & admin

Aeroguard
Agricultural Canada Vet.
Canada Immigration Centre
Dept. of National Revenue
Oxford Cleaners
RCMP
Transport Canada
U.S. Customs
U.S. Immigration

2. "Secondary linkages"

(i) On-site retail

Assiniboine Credit Union
Edna's Lottery Booth
National Vending
Teletrip Co. Ltd.
The United Cigar Group
Tomorrows Treasures
Versa Food Services

(ii) Ground transportation

Avis Rent-A-Car
Budget Rent-A-Car
Hertz Corporation
Thrifty Canada
Tilden Rent-A-Car
Unicity Taxi

APPENDIX II. Questionnaire for Primary and Secondary Organizations

CONFIDENTIAL

Survey of the Economic Significance
of the Winnipeg International Airport

Please complete this survey using data for the last twelve month period, or for the most recent fiscal year. All data will be treated in strict confidence and will not be released to any individual or body. Only total industry data will be published.

If any section is not appropriate to your operations, indicate by placing "N/A" in the provided space. Please feel free to direct any questions pertaining to the questionnaire or the study to:

Doug N. Futz
Research Associate
Phone: 474-9842

Dr. Barry E. Prentice
Professional Associate
Phone: 474-9766

Mailing Address:
Airport Impact Study
Transport Institute
Room 610, Drake Centre
The University of Manitoba
Winnipeg, MB
R3T 2N2

Section A: General information

(i) Name of firm/organization _____

Head office location _____

Relation with airport _____

Nature of business/service provided _____

(ii) Contact person _____

Position _____

Telephone number _____

(iii) Financial information for 12 month period from

_____ to _____

Section B: Employment, Expenditure and Tax Data

The following contains questions regarding employment numbers and annual expenditures for goods and services for your operations in Manitoba. If precise data are not available, please try to estimate within the nearest \$1,000, or 10 percent, as the case may be.

Employment

- (i) Average number of full-time employees residing in Manitoba during most recent fiscal period. _____

Percentage of total that are employed on-site at the Winnipeg International Airport. _____ %

- (ii) Number of part-time employees residing in Manitoba (please estimate full-time equivalents e.g., 2 part-time employees @ 20/week = 1 full-time employee). _____

Percentage of total workforce that are employed on-site at the Winnipeg International Airport. _____ %

- (iii) Total payroll expenses for employees residing in Manitoba (wages, salaries, benefits, excluding workers' compensation premiums). \$ _____

Total Expenditures for Goods and Services

- (i) Total operating expenditures on produced goods and services (please exclude wages, salaries, etc.). \$ _____

- (ii) Total Capital expenditures \$ _____

- (iii) Please estimate the percentage of total operating and capital expenditures that originate in Manitoba. _____ %

Taxes/Levies/Subsidies

(i) Provincial Taxes

(a) Sales taxes	\$ _____
(b) Corporate taxes	\$ _____
(c) Aviation fuel taxes	\$ _____
(d) Motive fuel taxes	\$ _____
(e) Payroll taxes	\$ _____
(f) Other provincial taxes (please specify)	
_____	\$ _____
(g) Workers' Compensation Premiums	\$ _____

(ii) Municipal Taxes/Levies

(a) Business taxes	\$ _____
(b) Property taxes	\$ _____
(c) water and sewage charges	\$ _____

(iii) Subsidies Received

(a) Provincial	\$ _____
(b) Municipal	\$ _____

Section C: Industry Inter-relationships

This study is examining airport-related expenditures for a wide range of businesses. In order to avoid double-counting of these expenditures it is necessary to identify major business relationships. These relationships are sub-divided into primary and secondary linkages. In this study a "primary linkage" is defined as an economic activity that is wholly aviation related, for example, airline expenditures to parts and service suppliers.

- (ii) Please refer to the attached list of firms considered to be "primary linkages". If any of your expenditures paid to these firms exceed \$50,000 please complete the following table (If extra space is necessary, please use the back of this page).

	<u>Type of Expenditure</u>	<u>Name of Business</u>	<u>Amount (\$)</u>
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

A "secondary linkage" is defined as a significant economic activity that is airport-related, such as travel agents.

- (iii) Please refer to the attached list of "secondary linkages". If any of the expenditures made to these organizations exceed \$50,000 please complete the following table (If extra space is necessary, please use the back of this page).

	<u>Type of Expenditure</u>	<u>Name of Business</u>	<u>Amount (\$)</u>
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Section D: Revenues

- (i) Gross annual revenues in Manitoba \$ _____
- (ii) Estimate percentage of gross revenues attributable to existence of the Winnipeg International Airport _____ %

Section E: Economic Impact of Air Traffic Growth to Year 2000

The information solicited in this section will be used to project economic activity to the year 2000.

(i) Passenger Growth Projections

For total passenger traffic at the Winnipeg International Airport to the year 2000, Transport Canada official forecasts indicate an average annual growth rate of 4.3 per cent. By 2000, this rate of growth would result in an absolute increase in traffic of approximately 80 per cent over current levels. Please estimate what impact, if any, this growth would have on your firm's sales, expenditures, and employment by the year 2000.

- (a) Sales Revenue _____ %
- (b) Expenditures _____ %
- (c) Employment _____ %

- (ii) If your firm anticipates passenger traffic to grow at a rate different from the Transport Canada forecast, please indicate your internal forecast or expectations.
- _____

(iii) Do you believe the recent National Transportation Act or the Canada-U.S. Free Trade Agreement will have any positive, or negative impacts on the future use of the Winnipeg International Airport?

	Positive	Negative	No Impact
National Transportation Act	_____	_____	_____
Free Trade Agreement	_____	_____	_____

Why do you believe this will be the likely outcome of the National Transportation Act and/or the Free Trade Agreement?

If you would like to add any comments, please use the space below.

APPENDIX III. Questionnaire for "Airport-Dependent" Hotels and Motels

1. (i) What is the total number of guest rooms in your establishment? _____

(ii) What was your average accommodation rate last year? (Please check appropriate box)

- ☐ less than 20 percent
- ☐ 20 to 40 percent
- ☐ 40 to 60 percent
- ☐ 60 to 80 percent
- ☐ over 80 percent

(iii) Please estimate the number of hotel rooms that are rented to air travellers as a percentage of all guests. (Please check the appropriate box.)

- ☐ less than 20 percent
- ☐ 20 to 40 percent
- ☐ 40 to 60 percent
- ☐ 60 to 80 percent
- ☐ over 80 percent

2. Please estimate the accommodation revenue from air travellers during the past year. \$ _____

3. (i) Average number of full-time accommodation employees during the past year (e.g., hotel clerks, chambermaids, porters, management, etc.). _____

(ii) Average number of part-time accommodation employees (please express in full-time equivalents, e.g., 2 part-time employees @ 20 hours/week = 1 full-time employee). _____

(iii) Approximate Payroll expenses, including benefits, paid to employees in (i) and (ii). \$ _____

4. (i) Provincial taxes paid during the past year. \$ _____

(ii) Municipal taxes paid during the past year. \$ _____

5. Total expenditures on goods and services during the past year. \$ _____

APPENDIX IV. "Airport-Dependent" Hotels and Motels

"Airport Dependent Hotels and Motels" are defined as those meeting one or more of the following criteria:

- (i) advertise on the airport site;
- (ii) advertise in Hotel and Travel Index;¹
- (iii) offer limousine service from the airport site; or,
- (iv) are located within a one mile radius of the airport.

By meeting these criteria, it is expected the air travellers' accommodation decisions are reflected by the target population.²

The following Manitoba hotels and motels satisfy the above criteria:

The Airliner	Place Louis Riel
Airport Hotel	Promenade on the Park
Assiniboine Gordon Inn	Ramada Inn
Best Western Carlton Inn	Relax Plaza Hotel
The Birchwood Inn	Sheraton Winnipeg
Canadiana Motor Hotel	St. Regis Flag Hotel
Charter House Hotel	Super 8 Motel
The Delta	TraveLodge
Gordon Motor Hotel	Viscount Gort Flag Motor Hotel
Grant Motor Inn	Westin Hotel
Fort Garry Hotel	
Holiday Inn-Downtown	
Holiday Inn-South	
International Inn	
Journey's End Motel	
Marlborough Inn Winnipeg	
Maryland Motor Hotel	
Montcalm Gordon Motor Hotel	
Polo Park Inn	

¹ This directory is the industry standard used by travel agents for booking out-of-town hotel/motel reservations.

² In North America, travel agents and tour operators account for 27.9 percent of all reservations. For air travellers, this figure is probably higher. The Canadian Tourism Attitude and Motivation Survey (CTAMS) found that 64 percent of all airline travellers used the services of an agent for at least part of their travel plans. (Worldwide Hotel Industry, Horwath and Horwath, International, 1986)

APPENDIX V. Calculation of Hotel and Motel Revenues

The responding 14 hotels and motels reported air traveller accommodation revenues of \$17,385,071.00. The non-respondents were estimated using the following assumptions which are illustrated with an accompanying example.

- (i) an average occupancy rate of 58.5 per cent.³

Therefore, if a hotel or motel has 350 rooms, the annual total number of rented rooms equals $350 \times 58.5\% \times 365 = 74,734$.

- (ii) an accommodation room rate based upon the advertised rates for single and double rooms.⁴ An average room rate was determined by weighing the two advertised rates on an assumed 40.6 percent double occupancy rate.⁵

For example, if a hotel advertises single rooms at \$44.50 and double rooms at \$48.00, the calculated average rate equals $(\$48.00 \times 40.6\%) + (\$45.50 \times (1 - 40.6\%)) = \$45.92$.

- (iii) The advertised rate does not reflect the actual revenue accommodation rate per occupied room: advertised rates are subject to discounts for corporate travellers, sports teams, etc. The discount coefficient was calculated based upon the respondents reported accommodation revenues and their advertised revenues per room. From this, the weighted average discount was calculated as 37 percent.

The total annual accommodation revenue for this example would be estimated at $74,734 \times 45.92 \times (1 - .37) = \$2,162,024$.

- (iv) The average percentage of accommodations rented to air travellers is based upon the weighed average reported by the total respondents. This is equal to 51.4 percent.

Therefore, the accommodation attributable to air travellers equals $\$2,162,024 \times 51.4\% = \$1,111,280$.

³ Manitoba Department of Development and Tourism, Accommodation Occupancy Survey.

⁴ Accommodation & Travel Services 1989, Travel Manitoba.

⁵ Canada average percentage of double occupancy. Trends in the Hotel Industry, International Edition, Pannell Kerr Foster, 1986.

APPENDIX VI

Table A.1 Economic Impact of CFB Winnipeg

<u>PERSONNEL</u>	
Regular force	2,400
Civilian	900
Non-publicly funded	100 (full-time)
	300 (part-time)
Reserve force	2,300
Cadets	<u>1,870</u>
TOTAL	7,570
<u>BASE RESOURCES</u>	
Size	2,991 acres
Buildings	153
Married quarters	969
Vehicles	225
Aircraft	24
<u>FINANCIAL IMPACT (1988/89 estimate)</u>	
Personnel pay-years (incl. reserves and cadets)	5,622
Military personnel costs	124,900,000
Civilian personnel costs	32,000,000
Equipment operating costs	51,500,000
Facility operating costs	<u>34,900,000</u>
TOTAL	243,300,000
Total DND expenditures in Manitoba	\$243,300,000
Economic multiplier	<u>1.75</u>
TOTAL IMPACT	<u>\$425,775,000</u>

Source: Courtesy of CFB Winnipeg

Table A.2 Direct Economic Impacts of the Winnipeg Airport

Linkage income	Output ¹ (\$000)	Employment (person-years)	Labour (\$000)
"Primary Linkage" Organizations			
Air carriers	229,209	1,849	81,849
General aviation	13,625	127	5,181
Air support services	85,048	1,248	41,076
Air operations and administration	<u>7,420</u>	<u>337</u>	<u>9,571</u>
Sub-totals	335,302	3,561	137,677
"Secondary Linkage" Organizations			
On-site retail	5,321	105	2,260
Ground transportation	7,177	76	1,166
Travel agencies	N/A ²	316	5,445
Hotel industry	<u>23,094</u>	<u>935</u>	<u>11,483</u>
Sub-totals	35,592	1,432	20,354
Canadian Forces Base Winnipeg	<u>36,000</u>	<u>550</u>	<u>26,000</u>
Totals	406,894	5,543	184,031

¹ For each organization, revenues received from any other organization causing a direct impact have been eliminated to derive the net value of its output. The total amount of inter-business transactions that were identified equals \$46,020,188.

² Because ticket agents' commissions are an airline expense, these revenues would be counted twice if included in the direct impact; nonetheless, it should be noted that this impact equalled \$16,254,552.

Table A.3 Average Weekly Earnings, by Industry, 1988

Sector	Weekly Earnings (\$)	
	Winnipeg	Manitoba
Mining		734.52
Manufacturing	450.37	455.61
Construction	555.06	529.87
Transportation, utilities and communication	574.38	583.73
Trade	325.72	313.01
Finance, insurance, and real estate	456.35	437.85
Service	351.16	356.28
Industrial composite	413.79	421.93

Source: Statistics Canada. Catalogue 72-002.

Table A.4 Major Levies Inter-provincial Comparison

Province	cents/litre
Newfoundland	0.007
Prince Edward Island	0.007
Nova Scotia	0.008
North West Territories	0.010
Ontario	0.0188
New Brunswick	0.021
British Columbia	0.0242
Alberta	0.050
Manitoba	0.058
Saskatchewan	0.070
Yukon	0.070
Quebec	*

* Quebec's tax is not calculated on a per litre basis.

Table A.5 Enplaned and Deplaned Passengers at Winnipeg International Airport

YEAR	MAJOR CARRIERS	CHARTER	REGIONAL/LOCAL CARRIERS	TOTAL
ACTUAL				
1977	1,886,300	60,500	18,000	1,964,800
1978	1,916,500	85,400	30,500	2,032,400
1979	2,149,100	89,900	36,300	2,275,300
1980	2,297,000	71,800	44,800	2,413,600
1981	2,241,900	74,400	58,700	2,375,000
1982	1,926,600	91,100	67,500	2,085,200
1983	1,871,900	67,700	65,300	2,004,900
1984	1,954,462	92,200	70,684	2,117,346
1985	1,966,564	92,800	91,217	2,150,581
1986	2,068,209	97,000	102,103	2,267,312
1987	2,024,506	90,379	113,134	2,228,019
1988	2,231,000	94,000	180,000	2,505,000
FORECAST				
1989	2,328,000	100,000	195,000	2,623,000
1990	2,386,000	107,000	204,000	2,697,000
1991	2,534,000	114,000	215,000	2,863,000
1992	2,651,000	122,000	224,000	2,997,000
1993	2,773,000	130,000	233,000	3,136,000
1996	Low	2,710,000	130,000	3,050,000
	Med.	3,016,000	160,000	3,436,000
	High	3,440,000	180,000	3,930,000
2001	Low	3,134,000	150,000	3,524,000
	Med.	3,584,000	190,000	4,074,000
	High	4,122,000	220,000	4,702,000
PROJECTION				
2006	4,091,000	220,000	340,000	4,651,000
AVERAGE ANNUAL GROWTH RATE				
1977-87	0.7%	4.1%	20.2%	1.3%
1987-96	4.5%	6.5%	9.7%	4.9%
1987-2001	4.2%	5.4%	7.2%	4.4%
1987-2006	3.8%	4.8%	6.0%	3.9%

Source: Statistics and Forecasts, Transport Canada Air.

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Source: Statistics and Forecasts, Transport Canada Air.

APPENDIX VII.

ACTIONS TAKEN BY THE

WINNIPEG INTERNATIONAL AIRPORT

AND AIR CARRIERS TO REDUCE AIRCRAFT NOISE EXPOSURE

1. Implementation of runway rotation procedures to spread the noise exposure as equally as possible in the departure and approach areas of the runways.
2. The major air carriers have implemented departure procedures to increase the angle of ascent from 12 degrees to 18 degrees. This means aircraft are much higher as they cross over populated areas of the city.
3. Departures to the extent when wind components allow, are being made on runways 31 and 36 away from populated areas.
4. When wind and traffic permit inbound flights land on runway 18 and departures on runway 31. This procedure is used in the late evening and during the night.
5. The airport, airlines, air traffic control, DND and others have established a technical committee to develop practical methods to address the aircraft noise situation.
6. The airlines have implemented a noise exposure awareness program for their flight crews. This relates directly to Winnipeg.
7. DND have taken the following steps:
 - a. No aircraft run-ups for maintenance after midnight.
 - b. The C130 Hercules will leave Winnipeg approximately Oct/Nov 89.
 - c. The C47 Dakota will cease flying as of 31 March.
 - d. Transient jet aircraft have been instructed to carry out a fuel stop landing only at WIA.

Source: Minutes of the Winnipeg International Airport Aircraft Noise Advisory Committee, April 17, 1989.

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